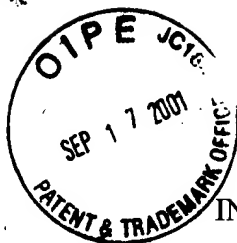


Section 101



PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re the Application of:

Douglas R. Foster, et al.

Serial No.: 09/782,926

Filed: February 13, 2001

Confirmation No.: 1667

Atty. File No.: 41992-00405

For: "INFORMATION ACCESS,
COLLABORATION AND INTEGRATION
SYSTEM AND METHOD"

) Group Art Unit: 2171
)
) Examiner: Not Yet Assigned
)
) SUBMISSION OF FORMAL DRAWINGS
)

<p>CERTIFICATE OF MAILING</p> <p>I HEREBY CERTIFY THAT THIS CORRESPONDENCE IS BEING DEPOSITED WITH THE UNITED STATES POSTAL SERVICE AS FIRST CLASS MAIL IN AN ENVELOPE ADDRESSED TO ASSISTANT COMMISSIONER FOR PATENTS, WASHINGTON, DC 20231 ON <u>9/14/01</u></p> <p>MARSH FISCHMANN & BREYFOGLE LLP</p> <p>BY: <u>[Signature]</u> Daxmar Sanchez</p>
--

Assistant Commissioner for Patents
Washington, D.C. 20231
ATTN: DRAWING REVIEW BRANCH

Dear Sir:

In connection with the above-identified patent application, enclosed for filing with said application are 37 sheets of formal, inked drawings illustrating Figs. 1-37 of the application. Figs. 1-37 constitute all of the drawings in the application.

Respectfully submitted,

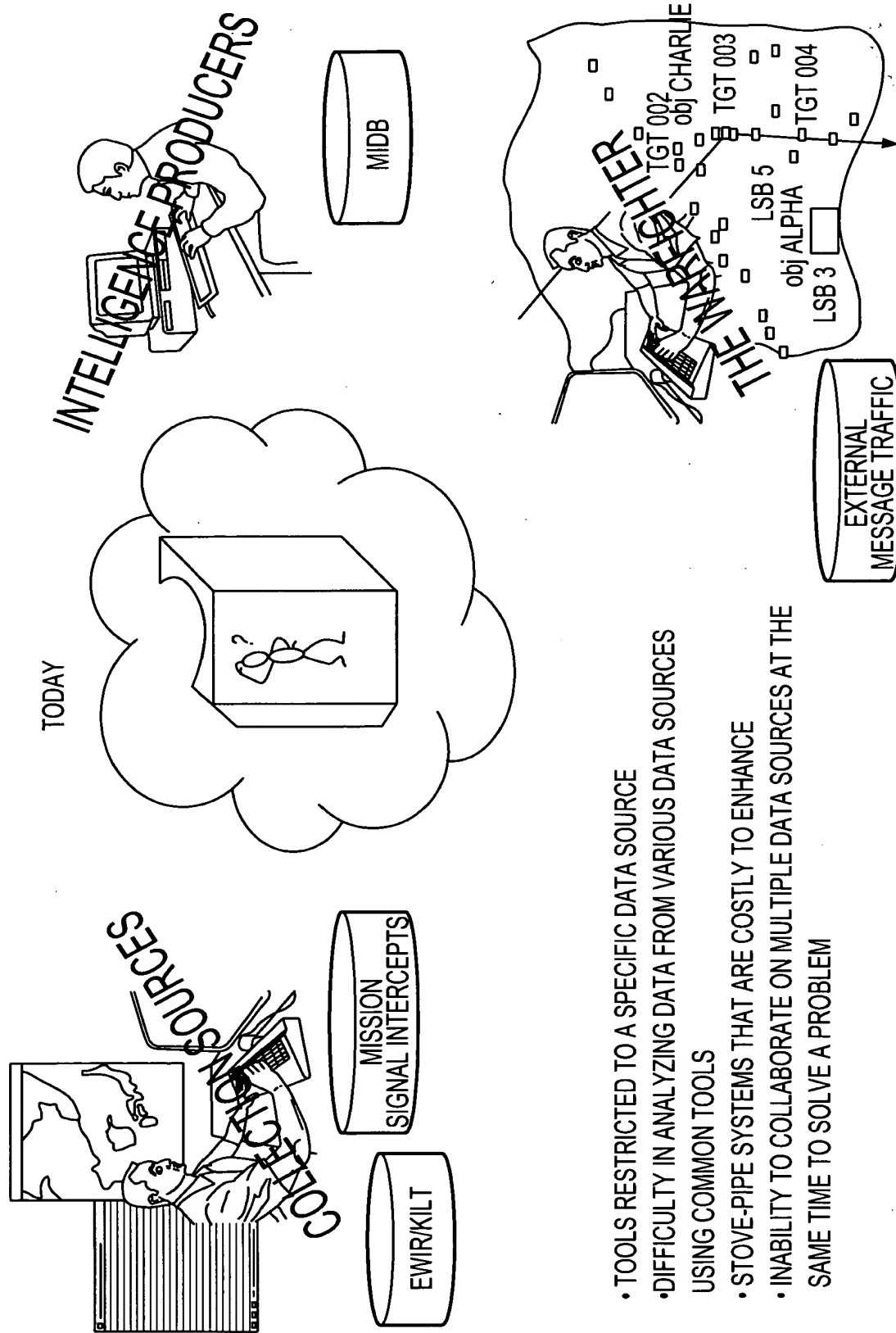
MARSH FISCHMANN & BREYFOGLE LLP

By Robert B. Berube
Robert B. Berube, Esq.
Registration No. 39,608
3151 South Vaughn Way, Suite 411
Aurora, Colorado 80014
Tel: (303) 338-0997

Date: Sept. 14, 2001

APPROVED	O.G. FIG.
BY	CLASS SUBCLASS
DRAFTSMAN	

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- TOOLS RESTRICTED TO A SPECIFIC DATA SOURCE
- DIFFICULTY IN ANALYZING DATA FROM VARIOUS DATA SOURCES USING COMMON TOOLS
- STOVE-PIPE SYSTEMS THAT ARE COSTLY TO ENHANCE
- INABILITY TO COLLABORATE ON MULTIPLE DATA SOURCES AT THE SAME TIME TO SOLVE A PROBLEM

FIG.1

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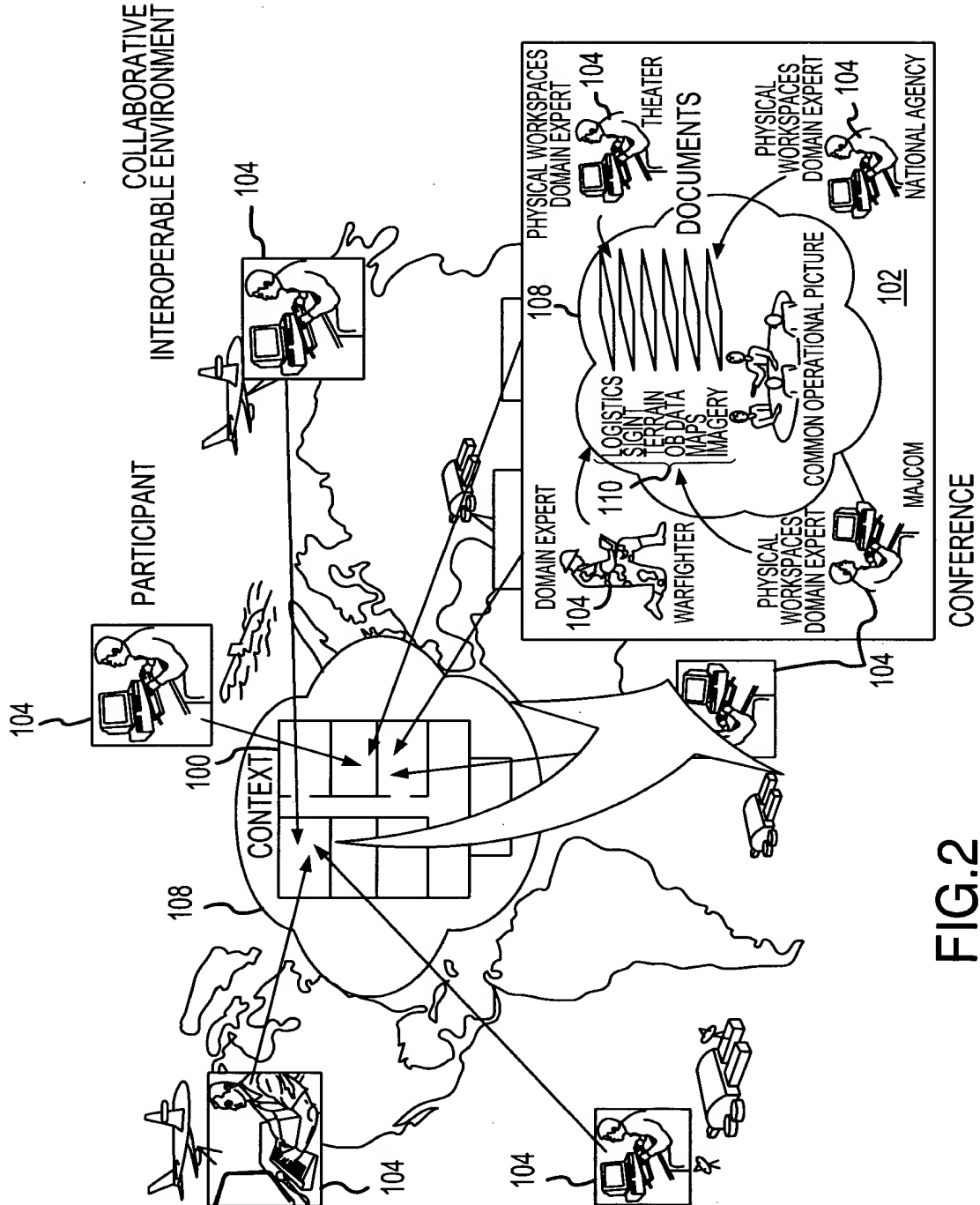
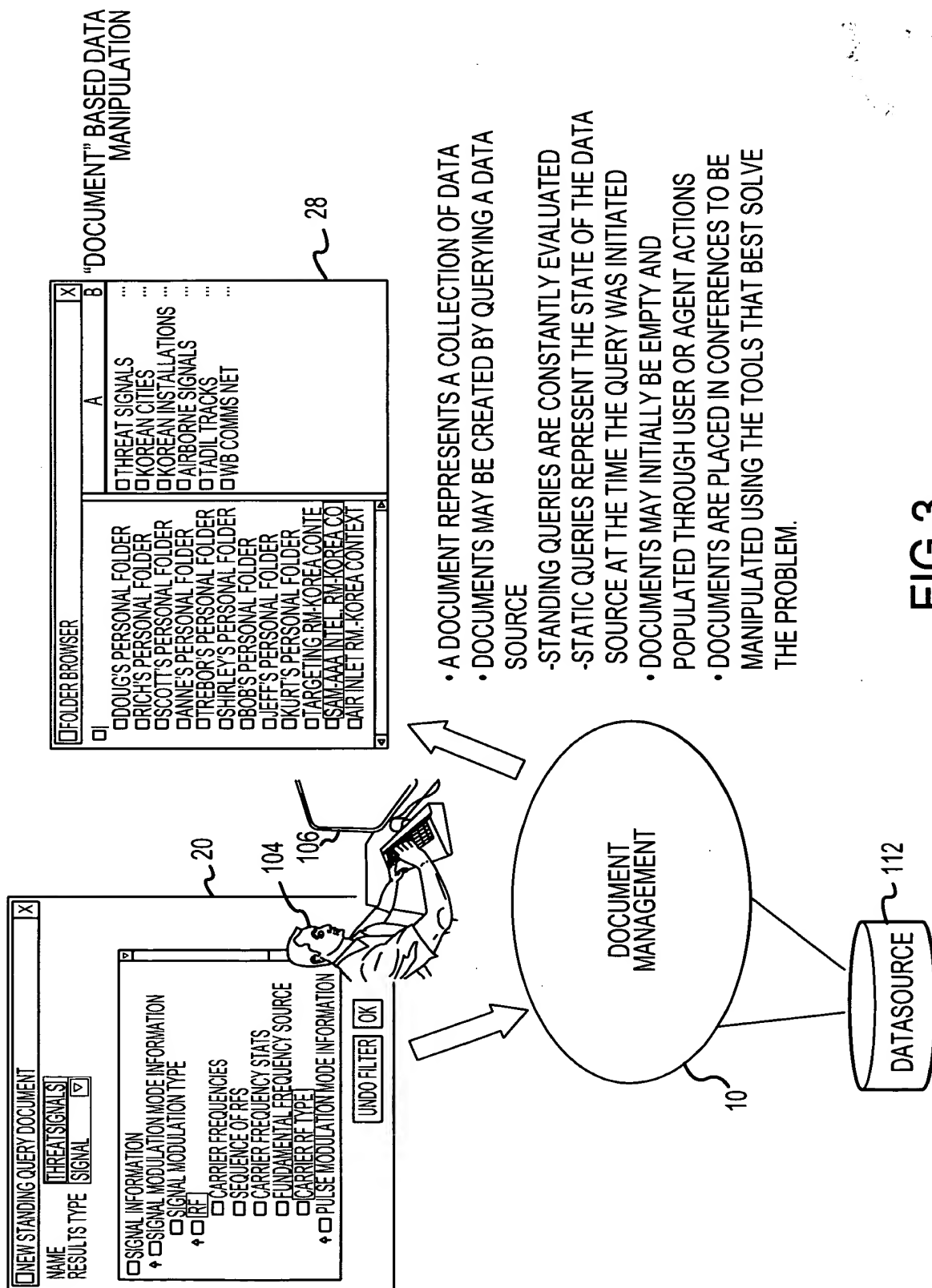


FIG.2

FIG. 2

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- A DOCUMENT REPRESENTS A COLLECTION OF DATA
- DOCUMENTS MAY BE CREATED BY QUERYING A DATA SOURCE
- STANDING QUERIES ARE CONSTANTLY EVALUATED
- STATIC QUERIES REPRESENT THE STATE OF THE DATA SOURCE AT THE TIME THE QUERY WAS INITIATED
- DOCUMENTS MAY INITIALLY BE EMPTY AND POPULATED THROUGH USER OR AGENT ACTIONS
- DOCUMENTS ARE PLACED IN CONFERENCES TO BE MANIPULATED USING THE TOOLS THAT BEST SOLVE THE PROBLEM.

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THIN CLIENTS INTERACT WITH DATA REPRESENTED BY A DOCUMENT

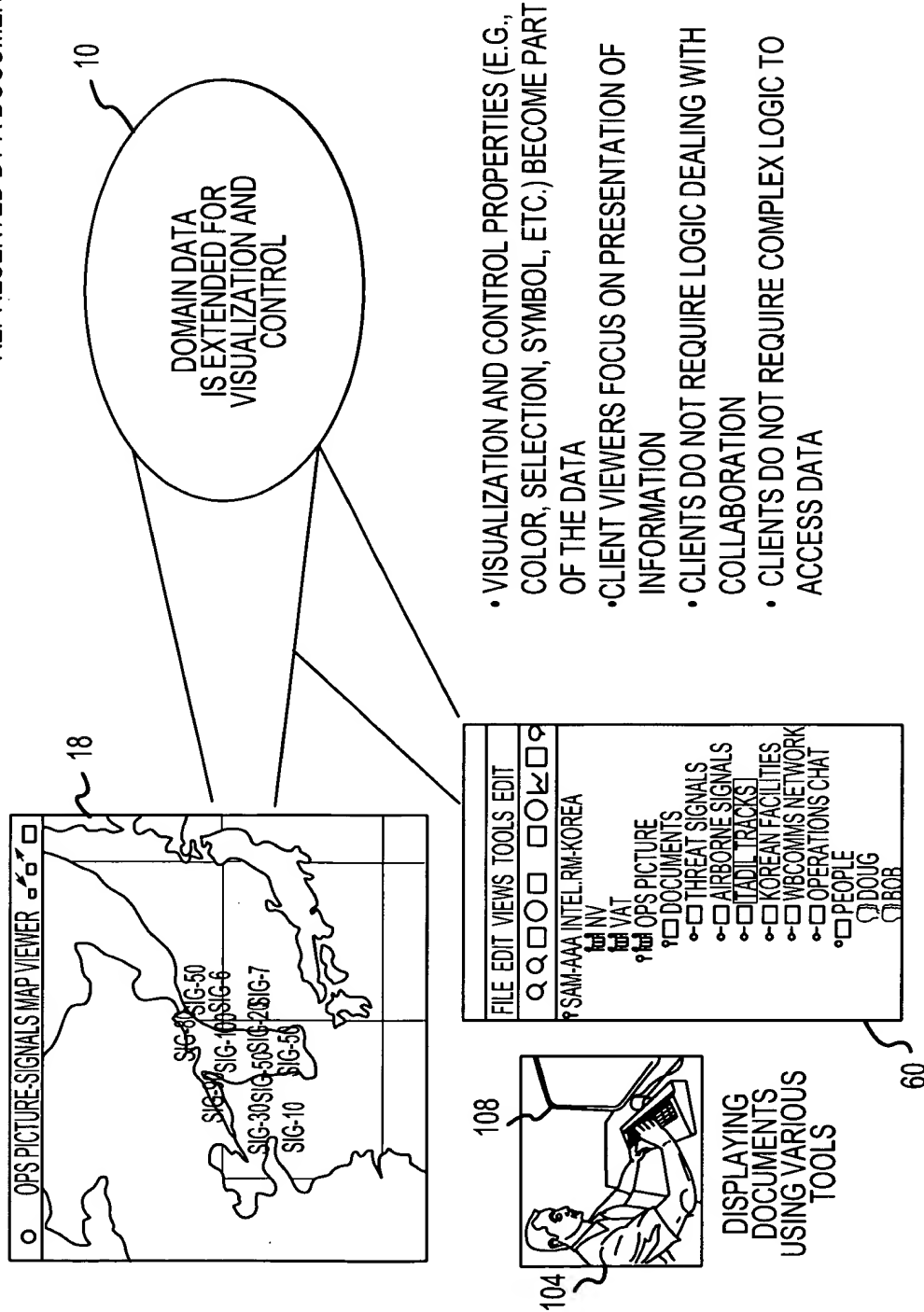
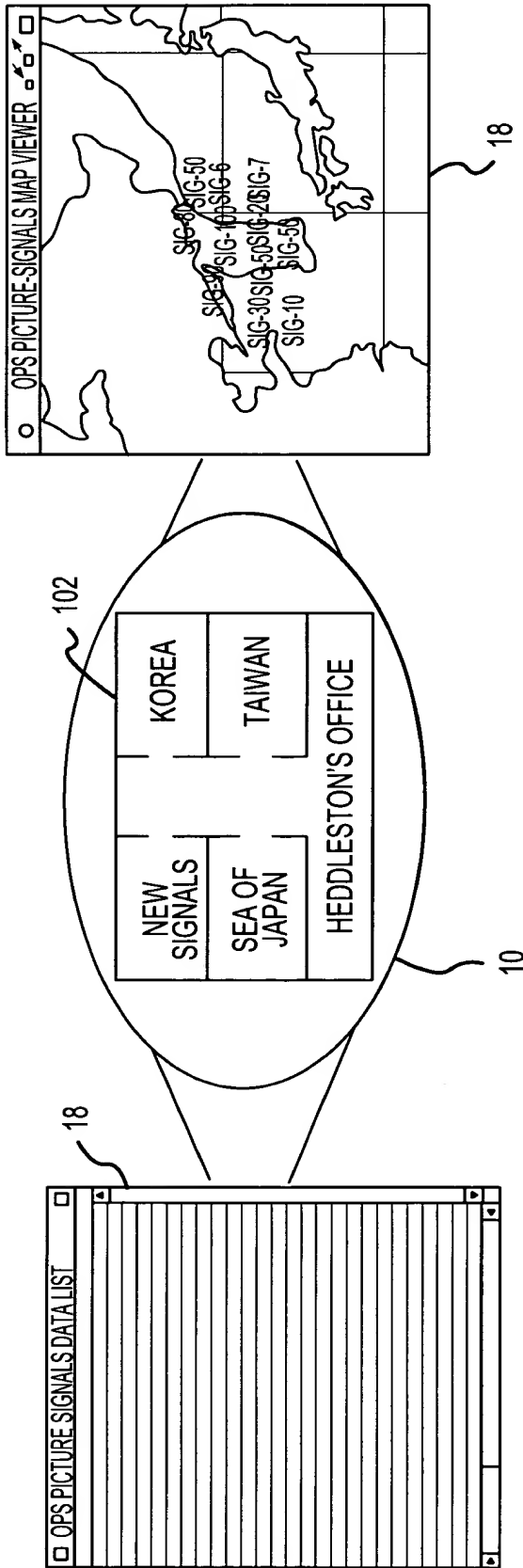


FIG.4

FIG. 5

COLLABORATION ON MULTIPLE VIEWS



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- SINGLE USER COLLABORATION
- MULTIPLE TOOLS IN THE SAME CONFERENCE COORDINATE VISUALIZATION (E.G. HIGHLIGHT, COLOR)
- ALL TOOLS IN A CONFERENCE COOPERATE FOR PROBLEM SOLVING
- NO TOOL-TO-TOOL COMMUNICATION



FIG.5

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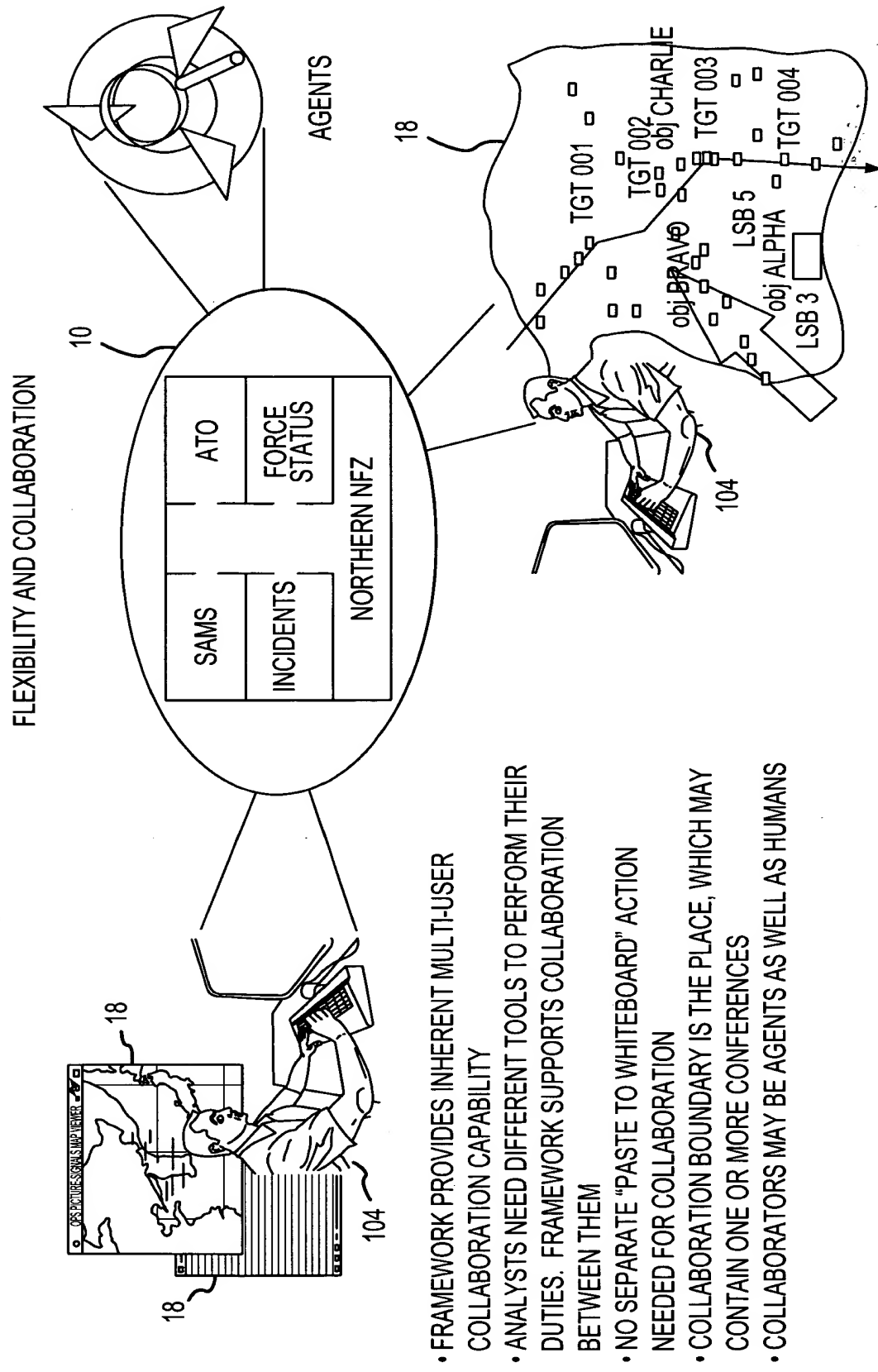


FIG. 6

- FRAMEWORK PROVIDES INHERENT MULTI-USER COLLABORATION CAPABILITY
- ANALYSTS NEED DIFFERENT TOOLS TO PERFORM THEIR DUTIES. FRAMEWORK SUPPORTS COLLABORATION BETWEEN THEM
- NO SEPARATE "PASTE TO WHITEBOARD" ACTION NEEDED FOR COLLABORATION
- COLLABORATION BOUNDARY IS THE PLACE, WHICH MAY CONTAIN ONE OR MORE CONFERENCES
- COLLABORATORS MAY BE AGENTS AS WELL AS HUMANS

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ARCHITECTURAL STRATEGY

KEY REFERENCE ARCHITECTURES

- OBJECT MANAGEMENT ARCHITECTURE (OMA)
 - OPENGIS, COSSERVICES
- COE LAYERED ARCHITECTURE
- UCA CRYPTOLOGIC FRAMEWORK
- USIGS
 - GIAS

KEY DATA MODELS

- SOM, MIDB, JCDB, ASAS, L245, ECDS, TEXTA

ARCHITECTURAL PATTERNS

- LAYERED ARCHITECTURE
- DATA CENTRIC ARCHITECTURE
- INFORMATION MANAGEMENT FRAMEWORK
- INTERACTIVE ANALYSIS FRAMEWORK
- MISSION MANAGEMENT ARCHITECTURE
- TASK MANAGEMENT FRAMEWORK
- RESOURCE MANAGEMENT FRAMEWORK

COTS SW INFRASTRUCTURE

- JAVA/C++
- CORBA
- ENTERPRISE JAVA BEANS
- RDBMS/ODBMS
- MICROSOFT WINDOWS
- WEB SERVER/BROWSER
- XML/DOM

COTS HW

- UNIX SMP SERVER
- NT WORKSTATIONS

FIG.8

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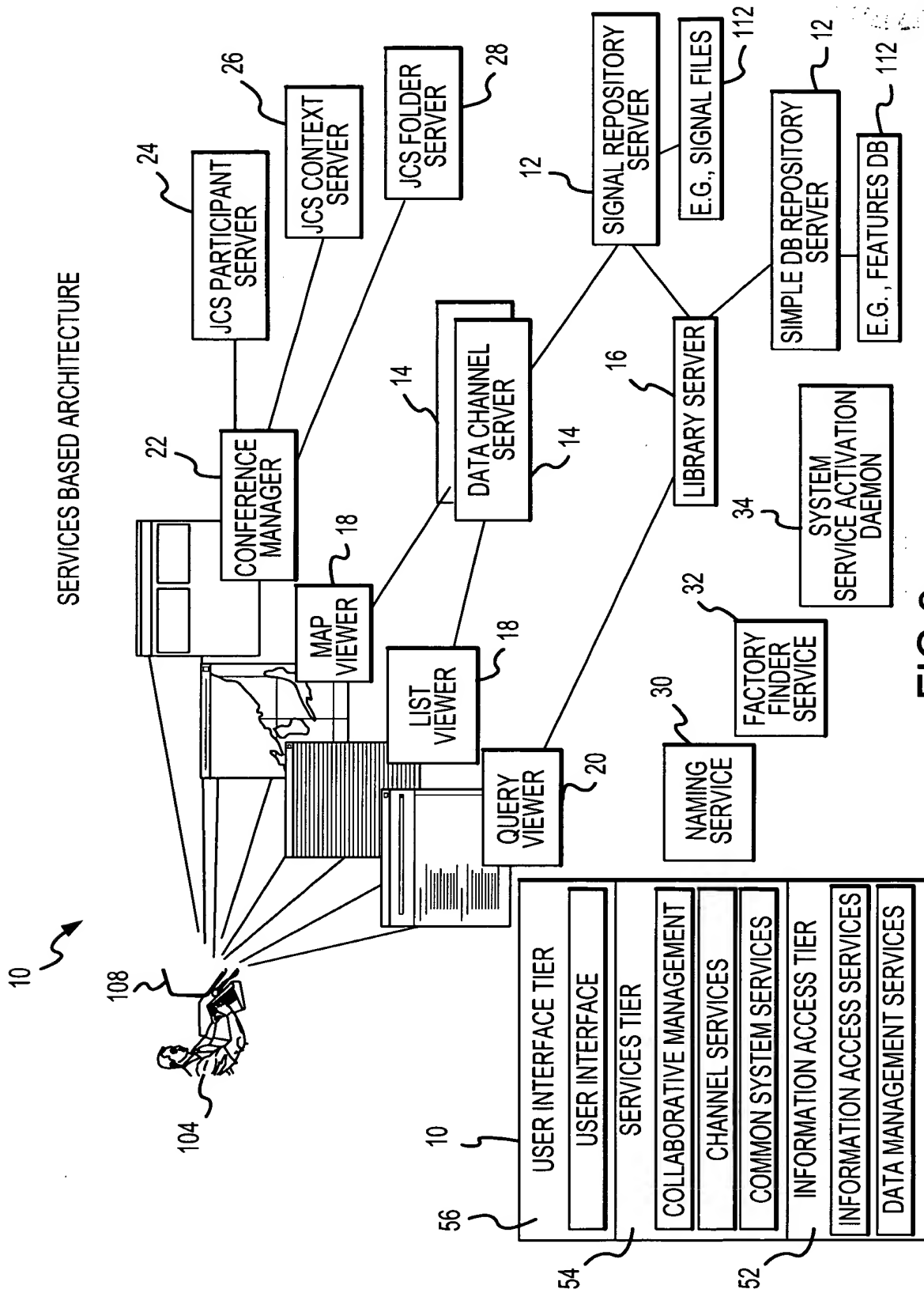


FIG.9

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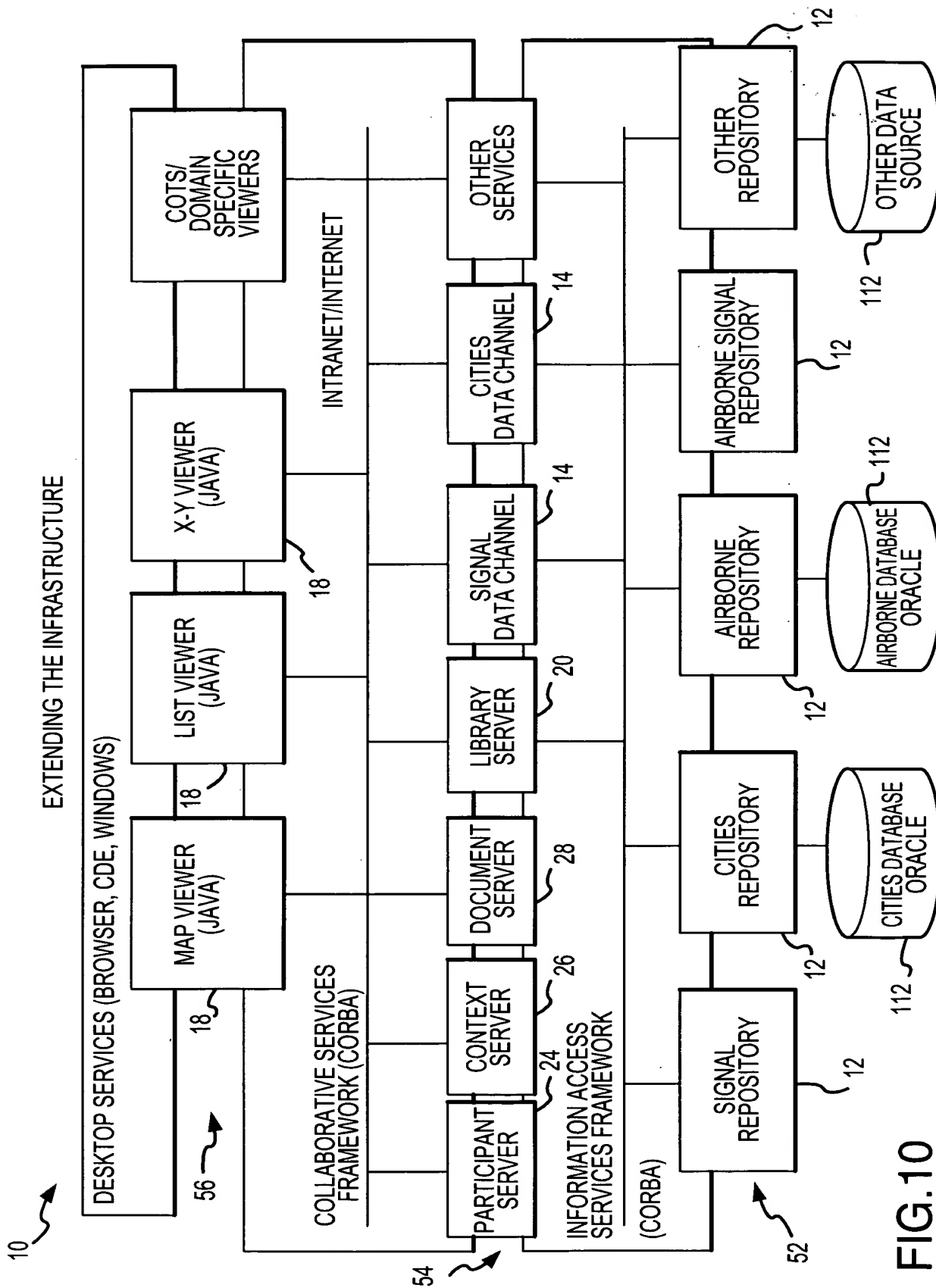


FIG. 10

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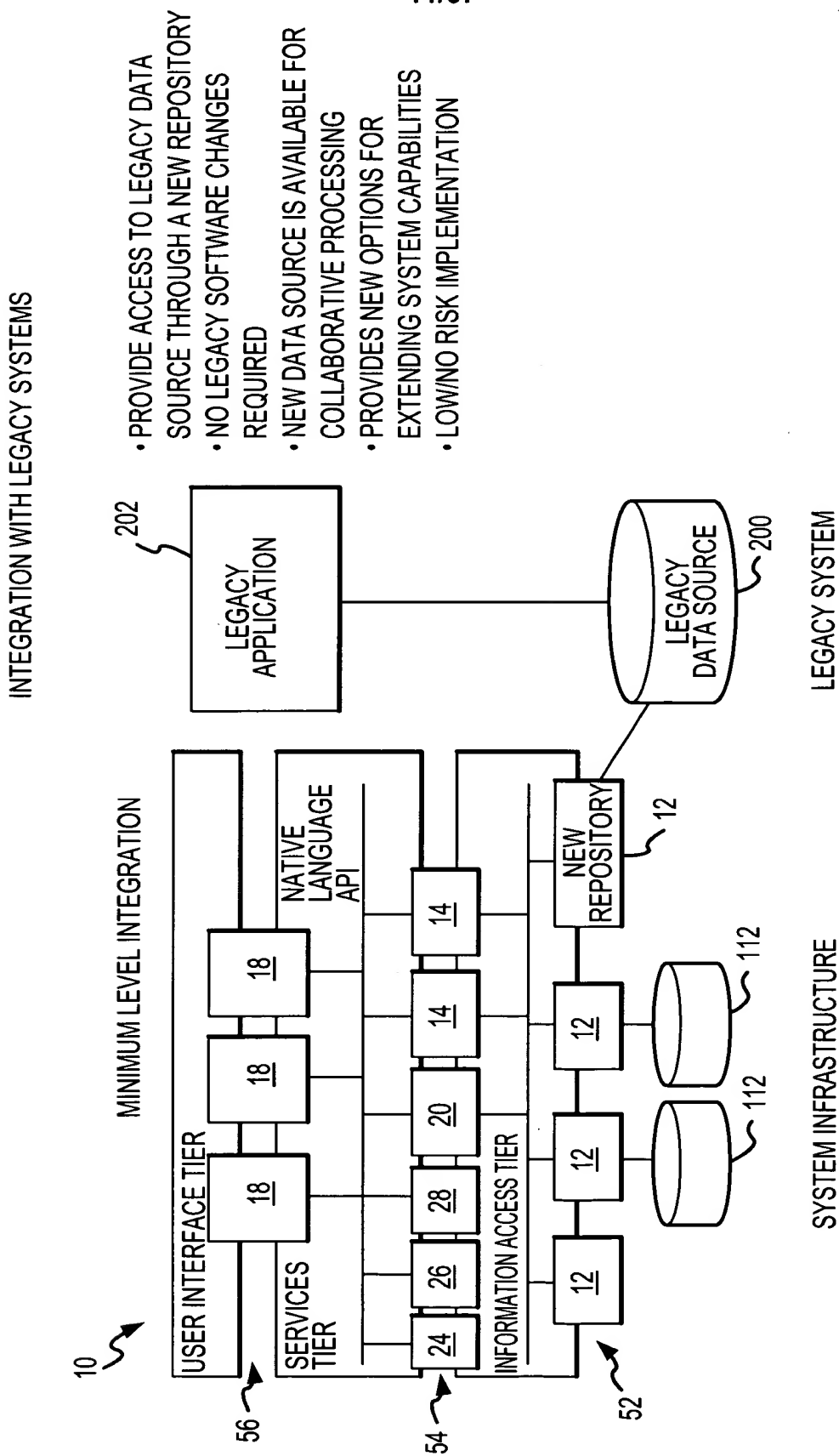
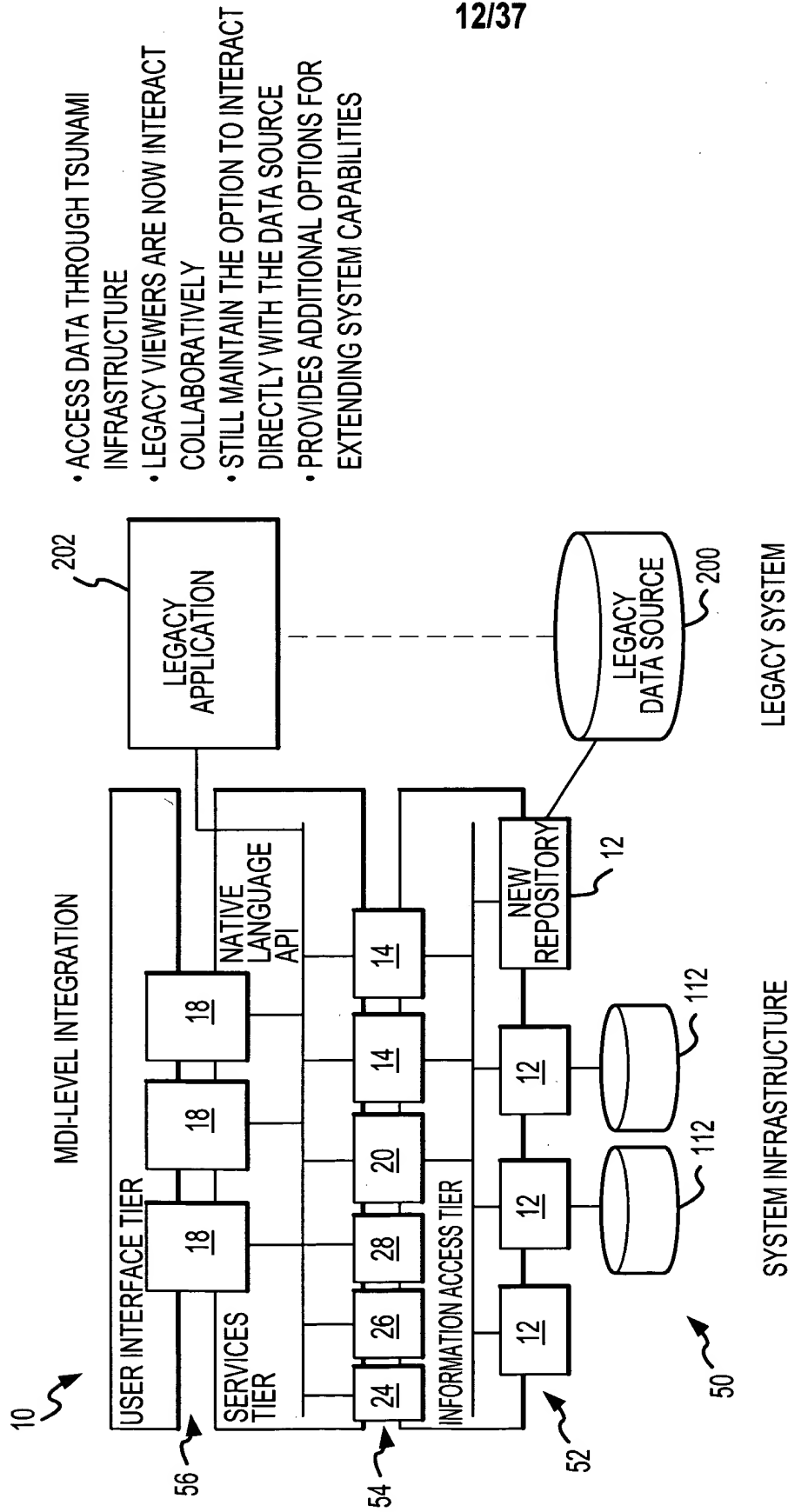


FIG.11

INTEGRATION WITH LEGACY SYSTEMS



- ACCESS DATA THROUGH TSUNAMI INFRASTRUCTURE
- LEGACY VIEWERS ARE NOW INTERACT COLLABORATIVELY
- STILL MAINTAIN THE OPTION TO INTERACT DIRECTLY WITH THE DATA SOURCE
- PROVIDES ADDITIONAL OPTIONS FOR EXTENDING SYSTEM CAPABILITIES

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FIG.12

INTEGRATION WITH LEGACY SYSTEMS

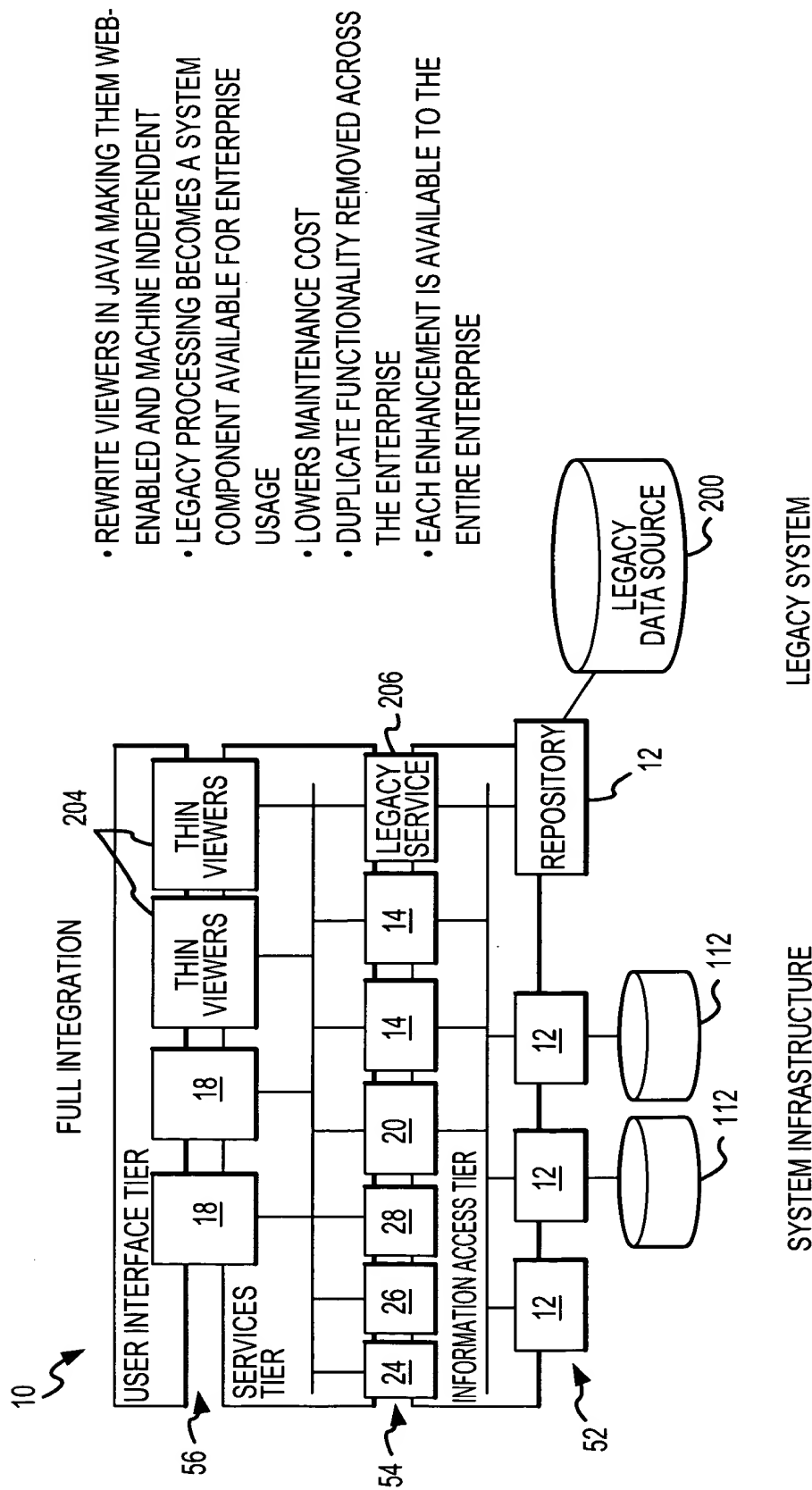


FIG.13

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IMPORTANCE OF DATA-CENTRIC COLLABORATION FRAMEWORK

- FRAMEWORK IS APPLICABLE TO MOST DOMAINS
- SMALL TOOLS EXTEND OVERALL CAPABILITY
 - BUILD DOMAIN OR ANALYST SPECIFIC TOOLS---NOT SYSTEMS
 - ADDING SINGLE COLLABORATIVE CAPABILITIES RESULTS IN EXPONENTIAL GROWTH OF OVERALL SYSTEM CAPABILITY
- COLLABORATION INTEGRAL TO FRAMEWORK
 - INSTEAD OF PASTING IMAGES ONTO A WHITEBOARD, COLLABORATE ON THE TOOL ITSELF USING WHITEBOARDING LAYER
 - NO SPECIAL LOGIC NEEDED IN TOOLS TO SUPPORT COLLABORATION
- SUPPORTS LEGACY APPLICATIONS
 - DATA IS SHARED AND NOT REPLICATED, SO CHANGES TO THE DATA BY LEGACY TOOLS PROPAGATE TO COLLABORATIVE TOOLS.

FIG.14

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FIG. 15

COLLABORATIVE
APPLICATION
MANAGEMENT

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FOI b7D b7C b7E b7F b7G b7H b7I b7J b7K b7L b7M b7N b7O b7P b7Q b7R b7S b7T b7U b7V b7W b7X b7Y b7Z

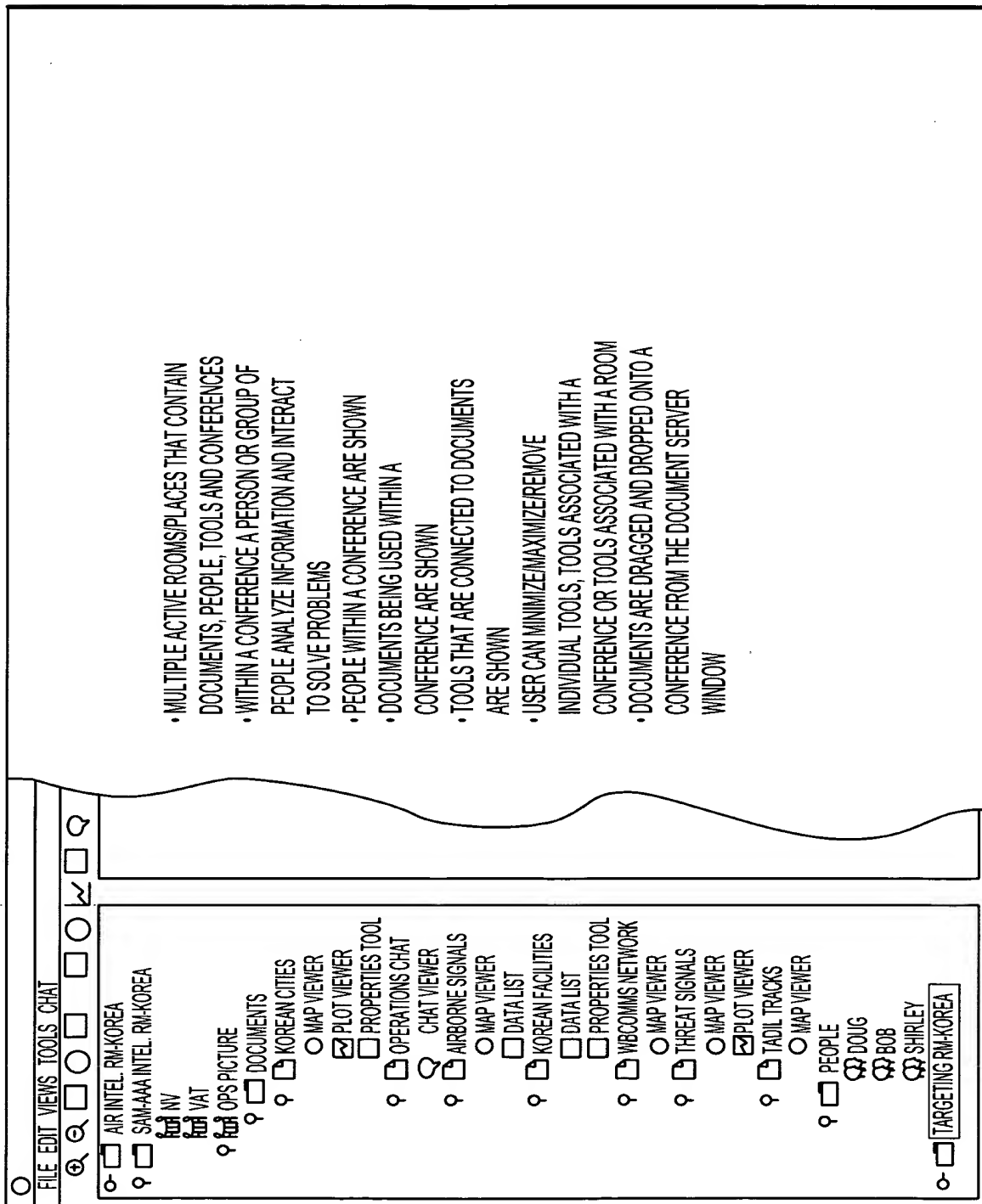


FIG.16

DYNAMIC REPOSITORY QUERY & DOCUMENT MANAGEMENT

- DYNAMICALLY LEARNS ABOUT REPOSITORY
- GETS ATTRIBUTE METADATA FROM REPOSITORY
- CREATES AGENT REPRESENTING STANDING QUERY
- RESULTS BECOME A DOCUMENT WHICH MAY BE USED FOR COLLABORATION

NEW STANDING QUERY DOCUMENT

NAME:

FEATURE TYPE:

☐ SIGNAL INFORMATION

☐ SIGNAL MODULATION MODE INFORMATION

☐ SIGNAL MODULATION TYPE

☐ RF

☐ CARRIER FREQUENCIES

☐ SEQUENCE OF RFS

☐ CARRIER FREQUENCY STATS

☐ FUNDAMENTAL FREQUENCY SOURCE

☐ CARRIER RF TYPE

☐ PULSE MODULATION MODE INFORMATION

CARRIER RF TYPE DIALOG

☐ PULSE CONSTANT RF

☐ PULSE SIMULTANEOUS RFS

☐ PULSE SEQUENTIAL RFS

☐ PULSE TO PULSE RANDOM RF

☐ PULSE TO PULSE PERIODIC RF

☐ PULSE TO PULSE ADAPTIVE RF

☐ BURST TO BURST AGILE RF

FOLDER BROWSER

☐ DOUG'S PERSONAL FOLDER

☐ RICH'S PERSONAL FOLDER

☐ SCOTT'S PERSONAL FOLDER

☐ ANNE'S PERSONAL FOLDER

☐ TREBOR'S PERSONAL FOLDER

☐ SHIRLEY'S PERSONAL FOLDER

☐ BOB'S PERSONAL FOLDER

☐ JEFF'S PERSONAL FOLDER

☐ KURT'S PERSONAL FOLDER

☐ TARGETING RM-KOREA CONTEXT

☐ SAM-AAA INTEL RM-KOREA C

☐ AIR INTEL RM-KOREA CONTEXT

THREAT SIGNALS

☐ THREAT SIGNALS

☐ KOREAN CITIES

☐ KOREAN INSTALLATIONS

☐ AIRBORNE SIGNALS

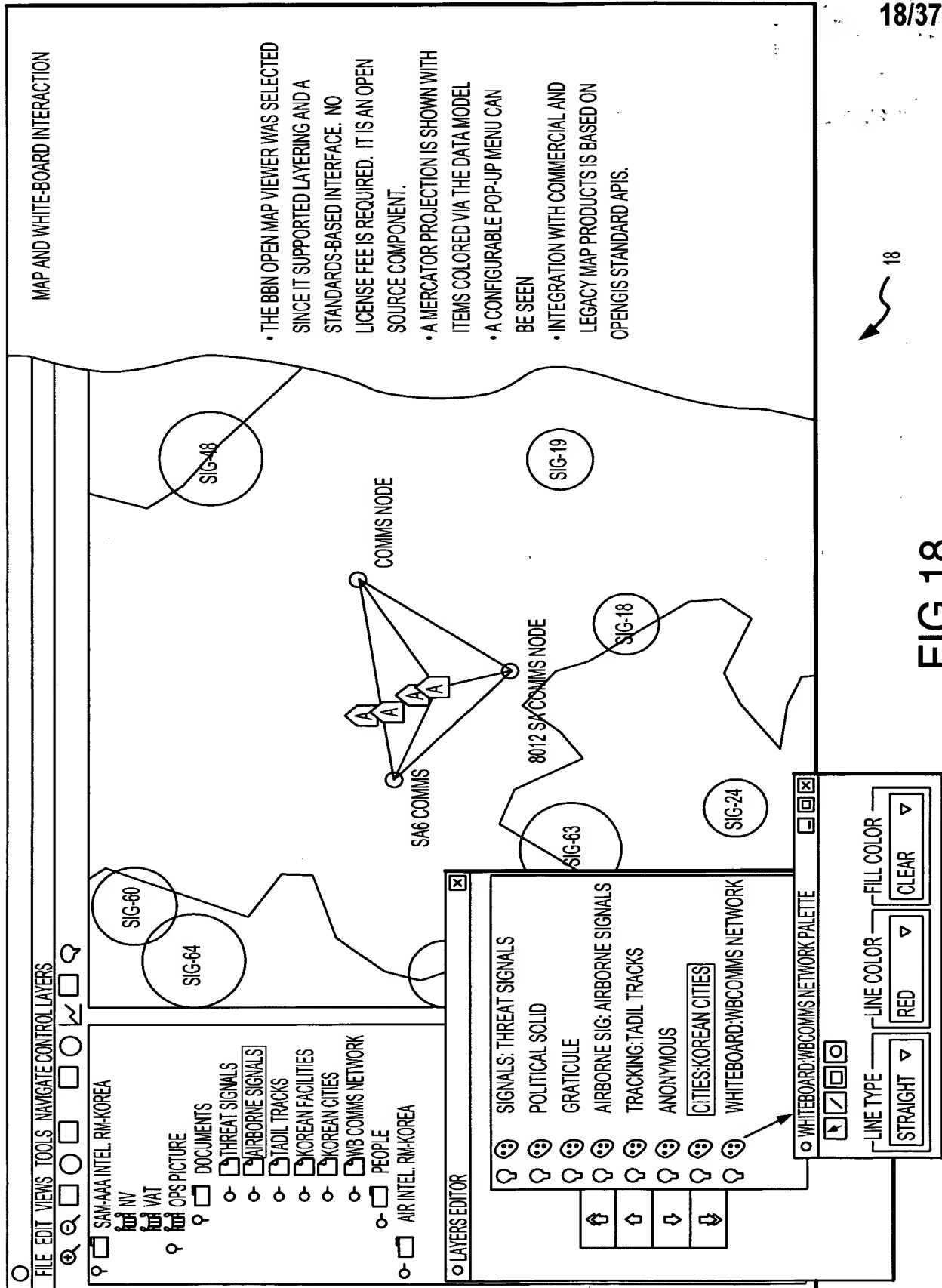
☐ TADIL TRACKS

☐ WBCOMMS NET

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FIG.17

FIG. 18



EXTENDED PROPERTIES EDITOR

☐ OPS PICTURE-KOREAN FACILITIES-PROPERTIES TO

COLOR-BY

SYMBOL-BY

VISIBILITY-BY

PROPERTY: THREAT

FILTER:

RANGE[0-2]

RANGE[10-10]

RANGE[3-6]

RANGE[7-9]

EDIT FILTER RULES

THREAT RANGE

MIN 0

MAX 2

COLOR FOR THIS RANGE

SWATCHES

HSB

RGB

RECENT

PREVIEW

SAMPLE TEXT SAMPLE TEXT

SAMPLE TEXT SAMPLE TEXT

SAMPLE TEXT SAMPLE TEXT

OK

CANCEL

DEFAULT COLOR

NEW

EDIT

DELETE

- DYNAMICALLY LEARNS INFORMATION SCHEMA FROM REPOSITORY
- ATTACHES EXTENDED PROPERTIES DATA IN THE DATA CHANNEL
- APPLIED RULES RUN AS AGENTS WITHIN THE CHANNEL
- EXTENDED PROPERTIES
 - COLOR
 - HIGHLIGHT
 - VISIBILITY
 - LABEL
 - SYMBOL
 -

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FIG.19

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X-Y PLOTTER

- SELECT X AND Y ATTRIBUTES FROM LIST PROVIDED BY REPOSITORY
- RE-ORDER DISPLAYS
- ZOOM/PAN IN ANY DISPLAY INDEPENDENTLY OR DEPENDENTLY

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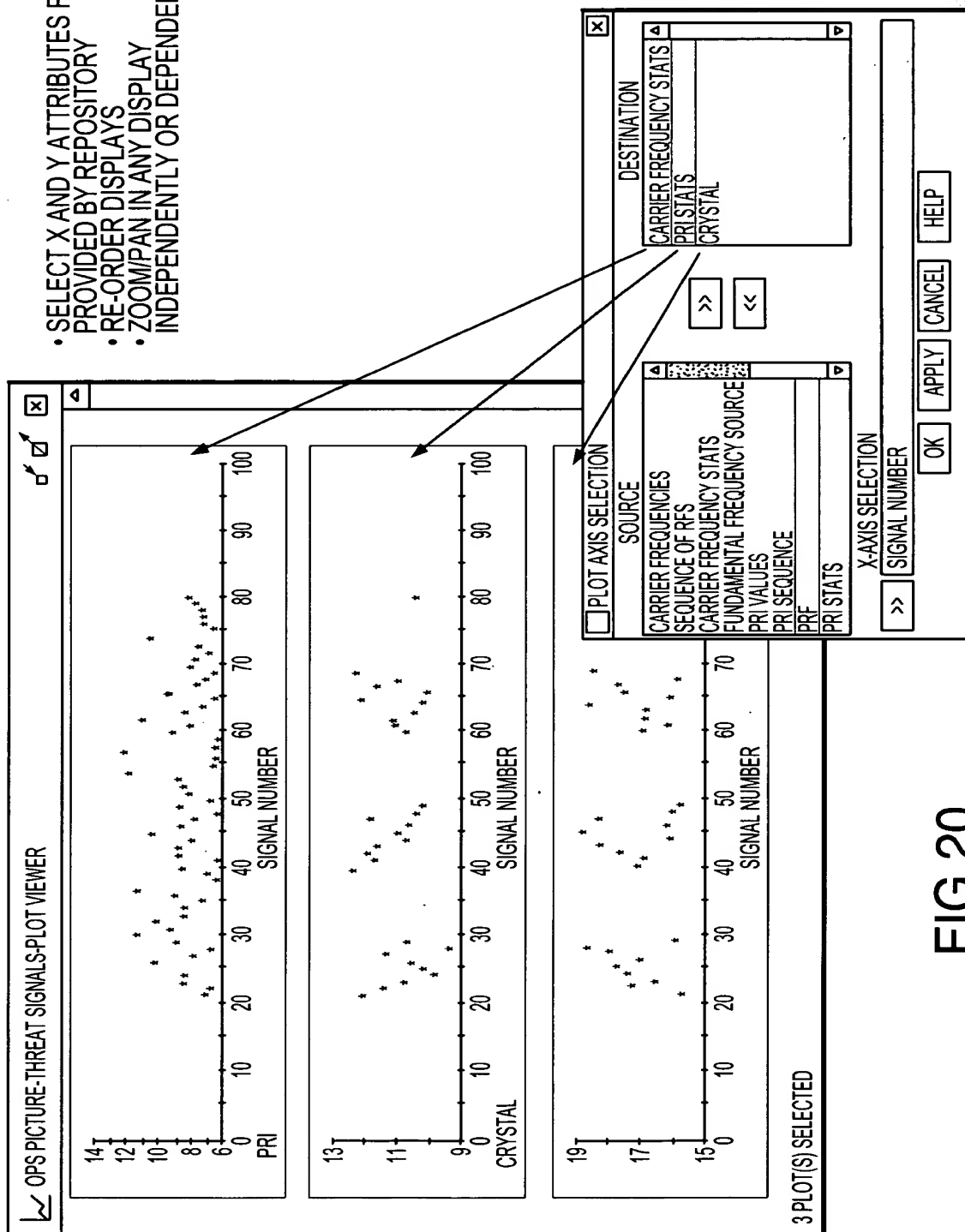


FIG.20

TOP SECRET

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LIST VIEWER

- SORTING
- ROW SELECTION
- ROW COLORING
- ROW HIDING
- CHOOSE ATTRIBUTES TO VIEW

OPSPICTURE-KOREANFACILITIES-DATALIST						☐	☑	☒	☒
SITECODE	NAME	COUNTRY	LATITUDE	LONGITUDE	THREAT				
KN00657	CHOOK	KN	39.233333	127.05	3				
KN00561	CHILTAE	KN	39.466667	127.05	6				
KN00017	PALBONG	KN	39.416667	127.066667	4				
KN00492	CH'ANGMOK	KN	39.433333	127.066667	5				
KN00250	ISDU	KN	39.562315	127.083333	8				
KN00228	PYONGSAN	KN	39.233333	127.1	0				
SC00002	232 AIR CO	KN	38.4	127.1	10				
KN00380	PYONGPUN	KN	39.983333	127.133333	4				
KN00227	PYONGSANG	KN	39.966667	127.166667	6				
KN00241	PAEAM	KN	39.683333	127.183333	5				
KN00242	PAEBAWL	KN	39.683333	127.183333	4				
KN00250	CHOOMIN	KN	17.430562	127.9	8				
KN00296	PAEKKONG	KN	38.466667	126.566667	1				
KN00478	CH'ANGGYE	KN	39.466667	126.566667	2				
KN00044	P'ANMUU	KN	37.895555	126.564555	8				
KN00045	RASDASS	KN	38.956546	127.566667	7				
KN00292	PAEKHWAD	KN	37.95	126.583333	6				
KN00425	CH'AERYON	KN	37.833333	126.6	2				
KN00257	PAEGO	KN	38.433333	126.6	1				
KN00521	CH'ARYONG	KN	39.366667	126.6	2				
SC00004	BQ12YSA	KN	37.8	126.6	10				
KN00030	P'ANCHON	KN	37.8	126.633333	5				
KN00712	CHODEDAM	KN	39.56	126.633333	7				
KN00019	PALCHACH'ON	KN	37.966667	126.633333	3				
KN00323	PAKTONGUM	KN	37.933333	126.65	4				
KN00103	PONGAM	KN	38.965333	126.65	8				
KN00493	CH'ANGNAE	KN	37.833333	126.666667	4				
KN00195	PYONGCHA	KN	37.916667	126.666667	4				

FIG.21

- CHAT TOOL
- CHAT SUPPORTS MULTIUSER CONVERSATIONS FROM MULTIPLE CONFERENCES IN MULTIPLE CONTEXTS
 - PEOPLE CONNECT TO A DOCUMENT AND COMMUNICATE
 - PEOPLE IN THE SAME CONFERENCE SEE THE SAME VISUALIZATION PROPERTIES LIKE COLOR AND VISIBILITY OF PARTICIPANTS INPUTS
 - CONVERSATIONS ARE PERSISTENT OVER TIME

OPSPICTURE-OPERATIONSCHAT-CHATVIEWER

DOUG: TADIL IS REPORTING AN INBOUND PLANE
DOUG: DOES ANYONE KNOW WHAT TYPE OF PLANES THESE ARE
BOB: I GOT AN ELINT HIT AGAINST TRACK #52. IT LOOKS LIKE IT IS A MIG FIGHTER AIRCRAFT
SHIRLEY: BASED ON THE COMMS BETWEEN THE TWO AIRCRAFT THEY ARE PLANNING TO CROSS THE BORDER AND PULL OUR FIGHTERS INTO A TRAP
SHIRLEY: THEY HAVE A NETWORK OF SAM'S READY TO TAKE OUT OUR PURSUING FIGHTERS
SHIRLEY: HAVE WE SEEN ANY FIGHTER ACTIVITY?
BOB: I JUST GO AN SA-6 TT HIT ON THE SUNAN SITE. WE HAD BETTER LET THE AWACS KNOW, AND AMPLIFY THOSE TADIL TRACKS WITH OUR ID INFORMATION

FIG.22

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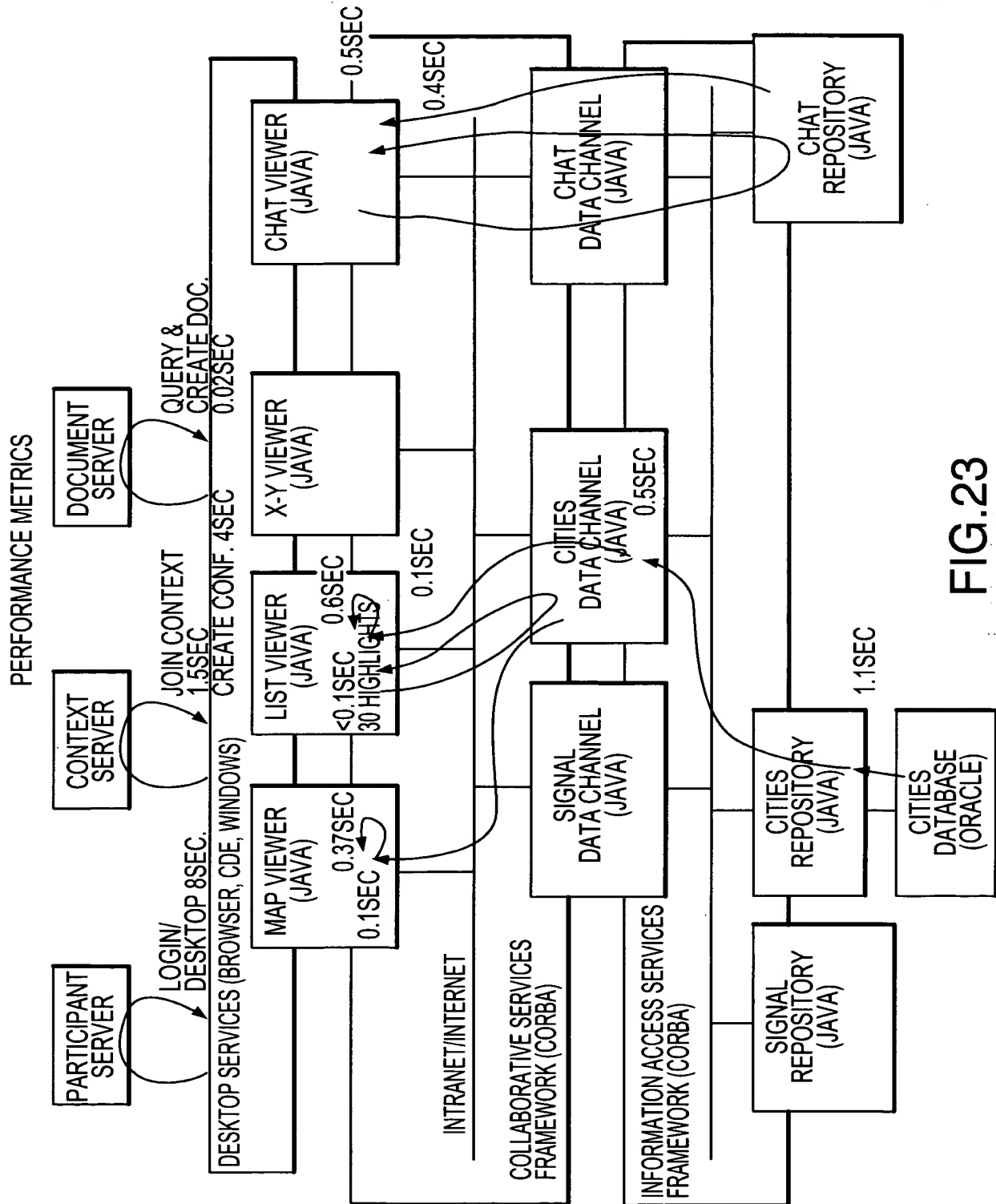
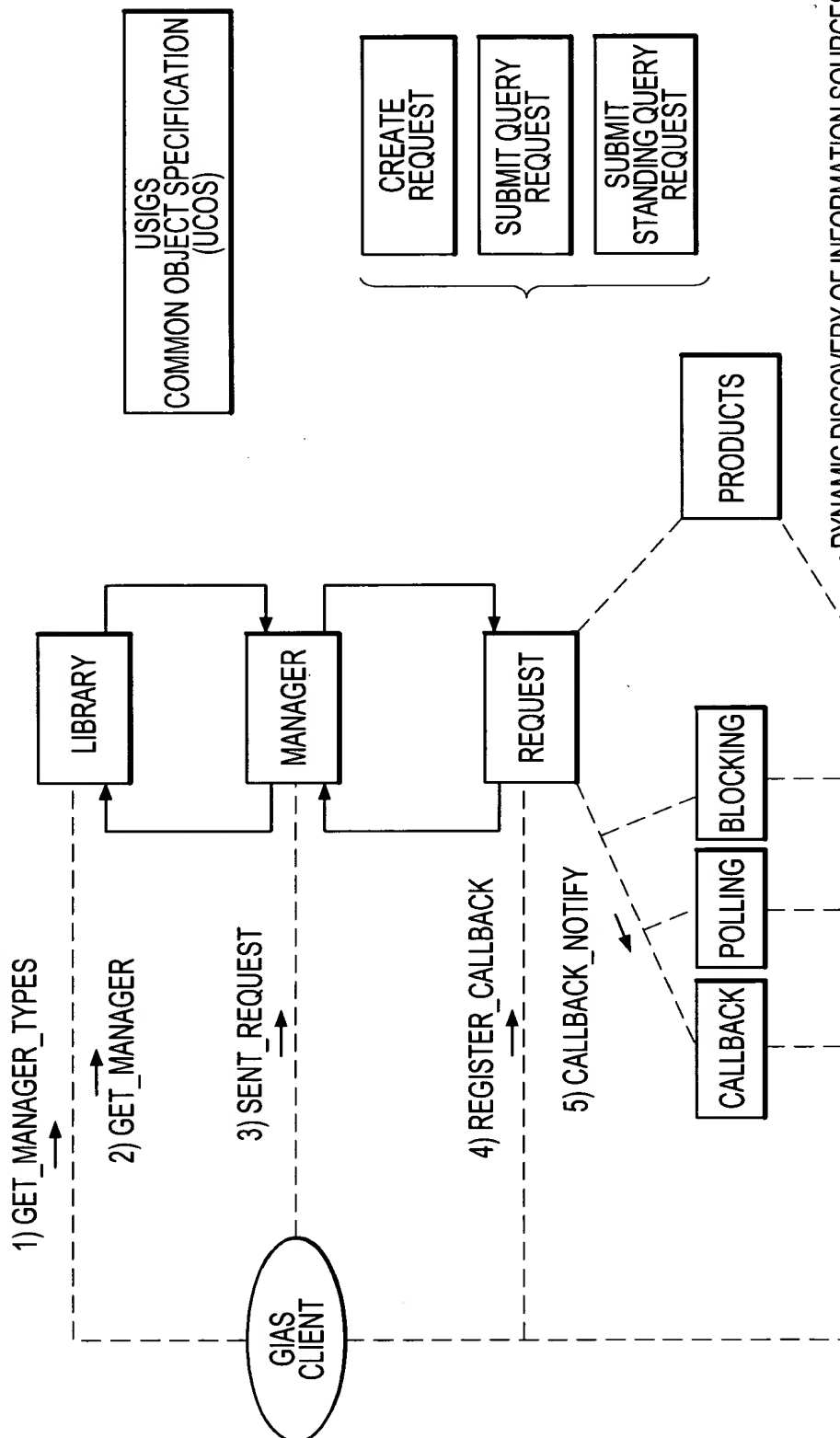


FIG.23

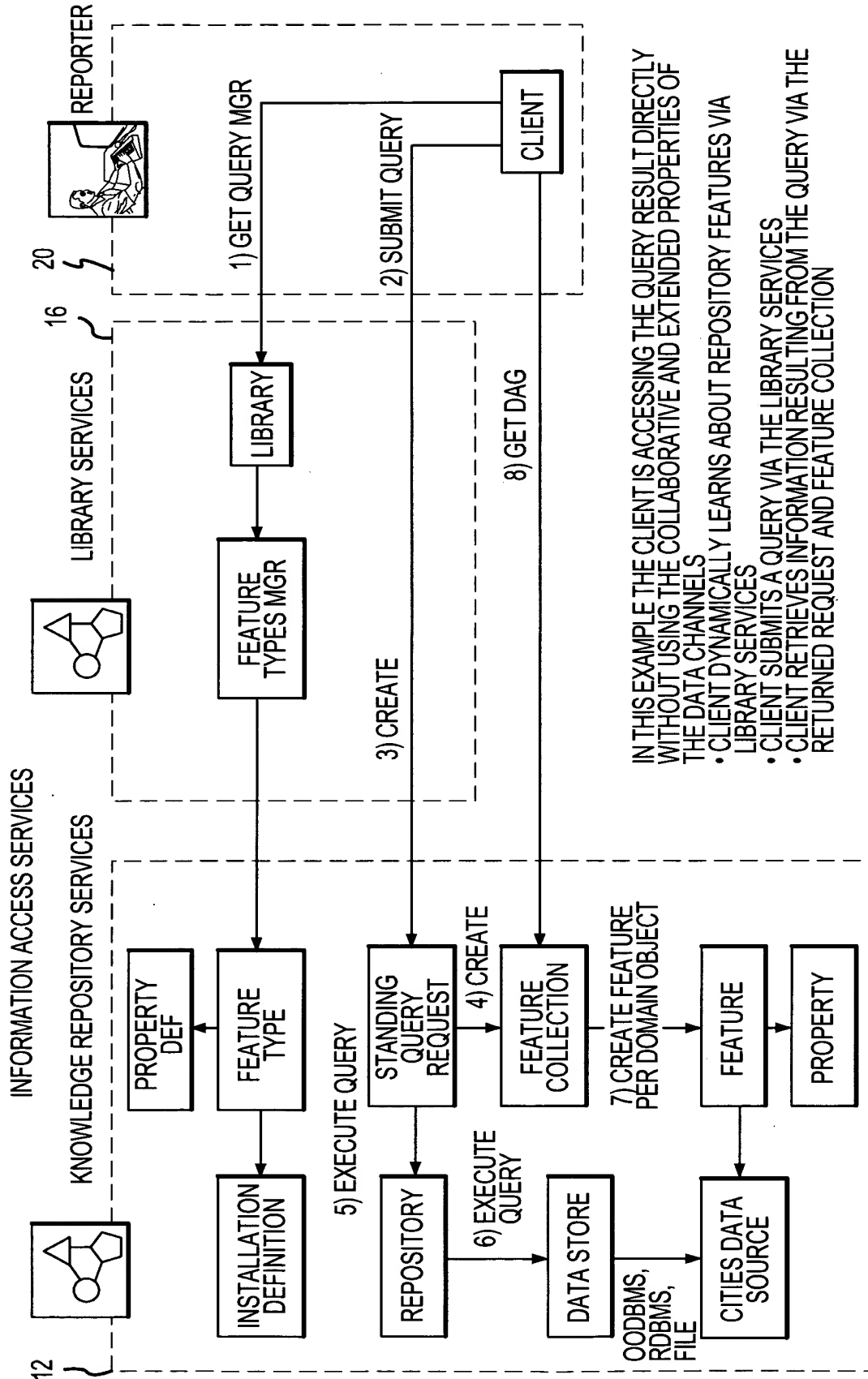
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USGS-GEOSPATIAL AND IMAGERY ACCESS SERVICES SPECIFICATION



- DYNAMIC DISCOVERY OF INFORMATION SOURCES
- DYNAMIC DISCOVERY OF ACCESS TECHNIQUES
- SYNCHRONOUS, ASYNCHRONOUS, POLLING ACCESS MECHANISMS
- CLIENTS AUTONOMOUS REQUEST EXECUTING WITHIN THE DATA ENVIRONMENT
- ALL INTERFACES AND STRUCTURES REPRESENTED WITHIN IDL (UCOS-DAG)

FIG.24



IN THIS EXAMPLE THE CLIENT IS ACCESSING THE QUERY RESULT DIRECTLY WITHOUT USING THE COLLABORATIVE AND EXTENDED PROPERTIES OF THE DATA CHANNELS

- CLIENT DYNAMICALLY LEARNS ABOUT REPOSITORY FEATURES VIA LIBRARY SERVICES
- CLIENT SUBMITS A QUERY VIA THE LIBRARY SERVICES
- CLIENT RETRIEVES INFORMATION RESULTING FROM THE QUERY VIA THE RETURNED REQUEST AND FEATURE COLLECTION

FIG.25

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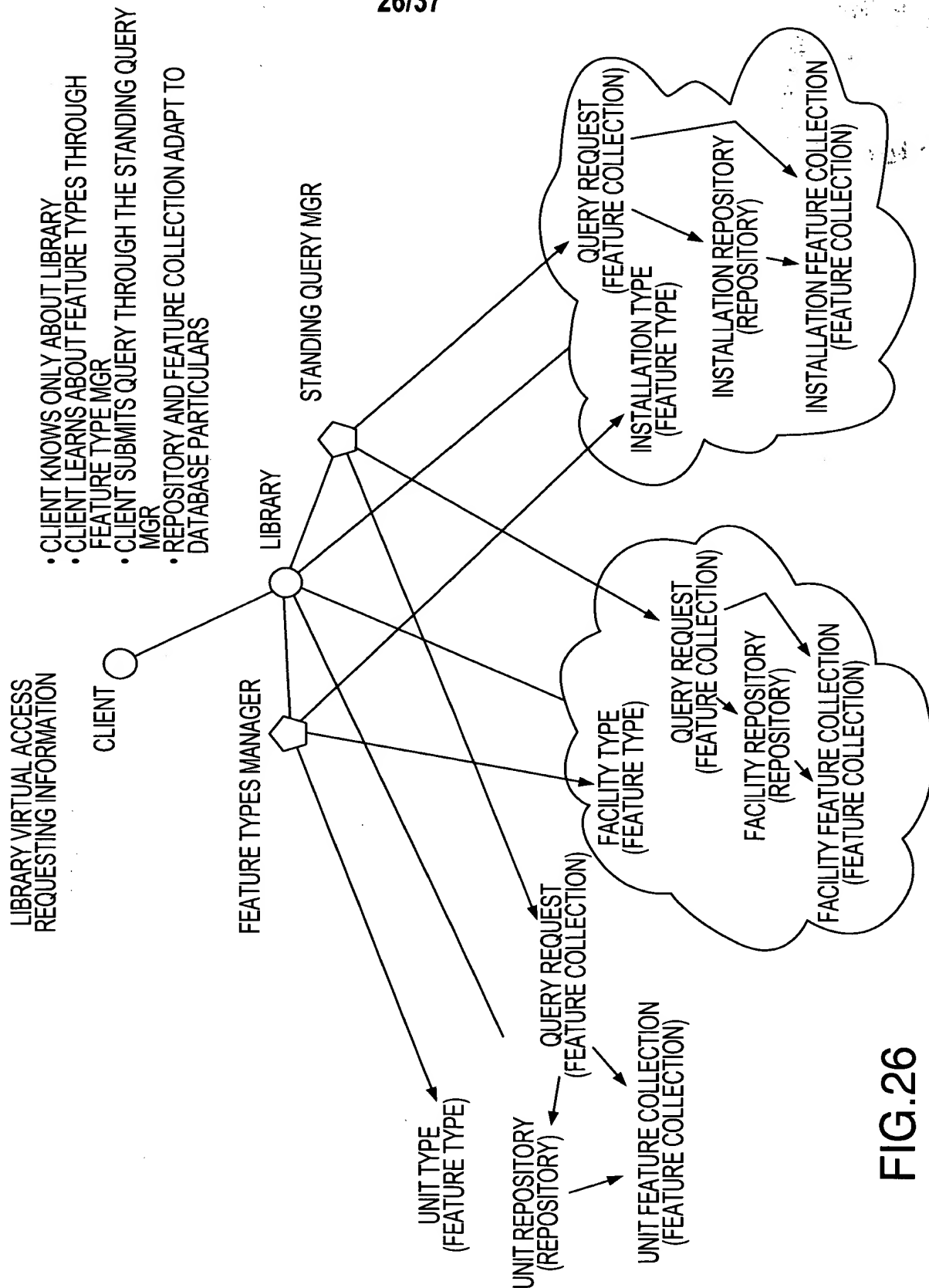
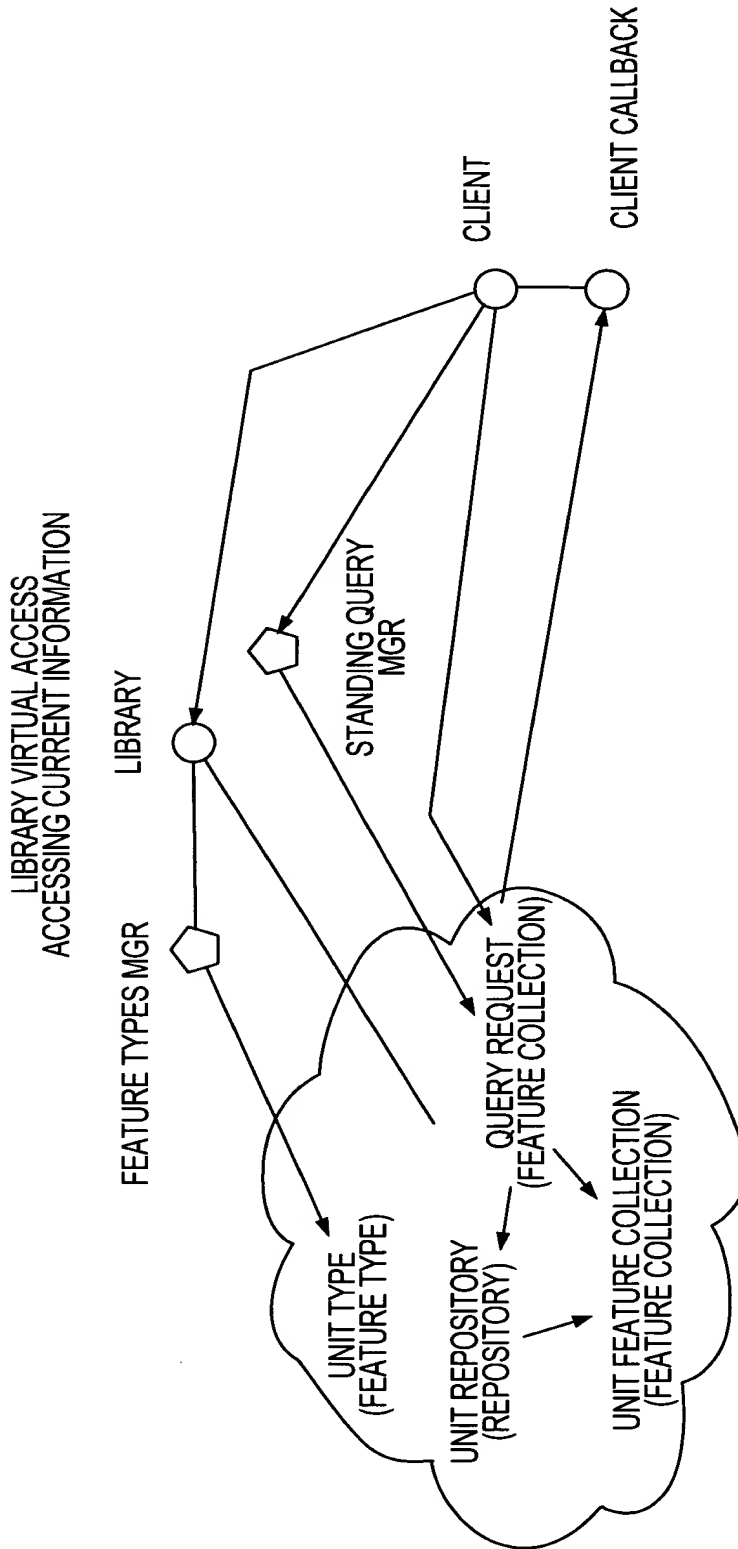


FIG.26

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- CLIENT LEARNS ABOUT STANDING QUERY MGR THROUGH LIBRARY
- QUERY MANAGER RETURNS A REFERENCE TO A REQUEST OBJECT FOR EACH CLIENT QUERY METHOD INVOCATION
- CLIENT INTERACTS WITH REQUEST FOR QUERY CONTROL AND STATUS
- REQUEST SUPPORTS SYNCHRONOUS, POLLING, AND A-SYNCHRONOUS CLIENT INTERFACES. CLIENT CALLBACK IS USED FOR A-SYNCHRONOUS FEEDBACK ON QUERY STATE

FIG.27

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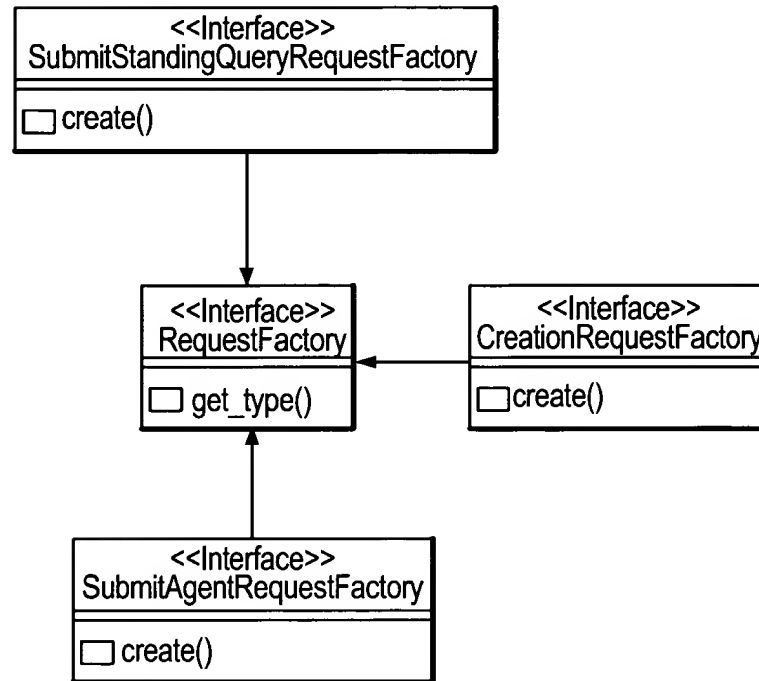


FIG.28

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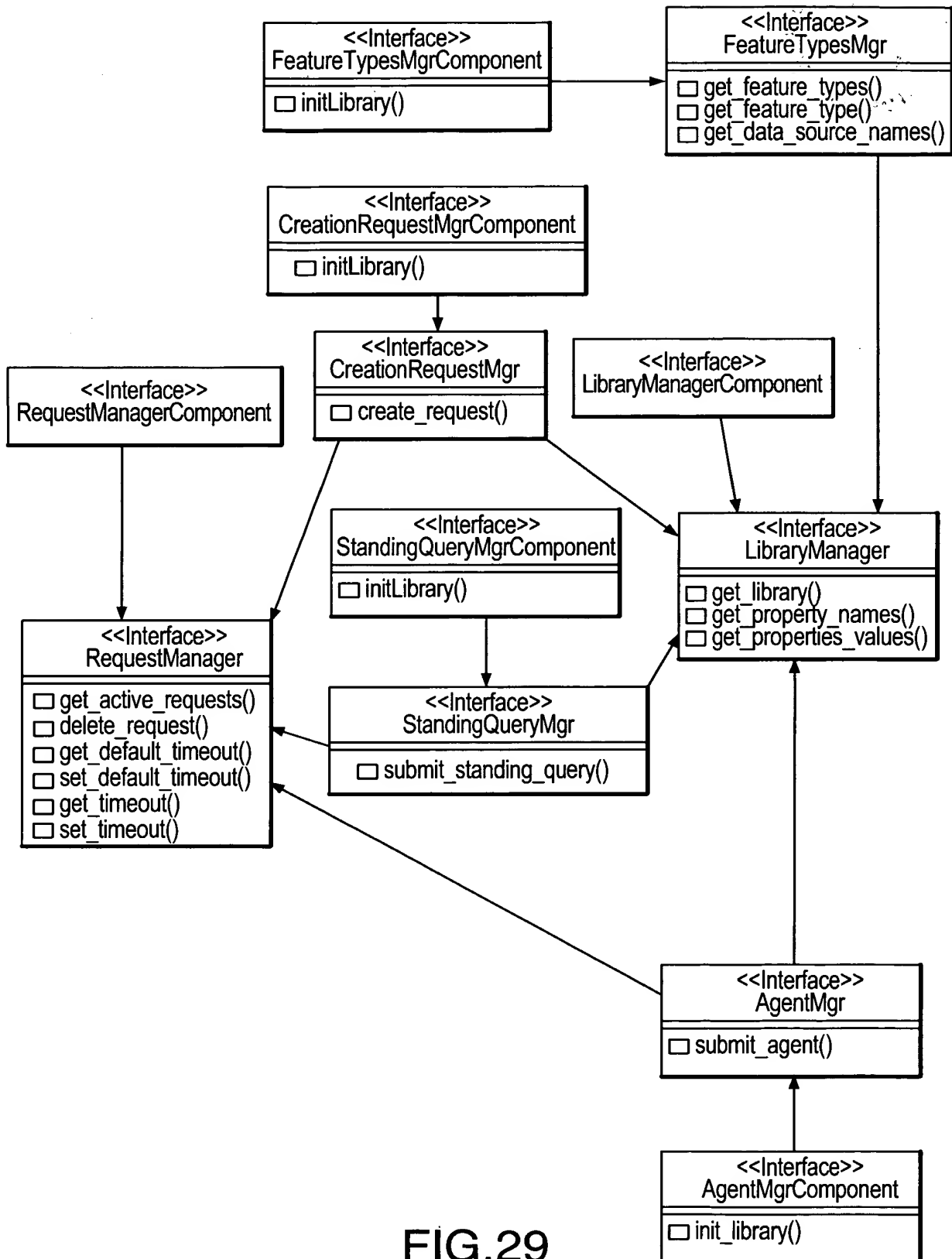


FIG.29

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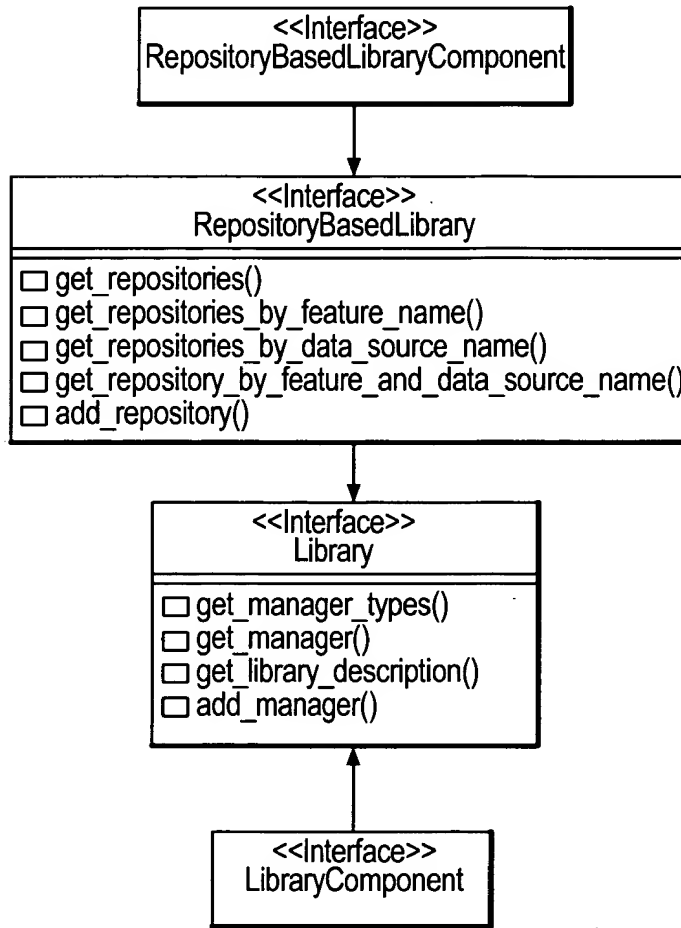


FIG.30

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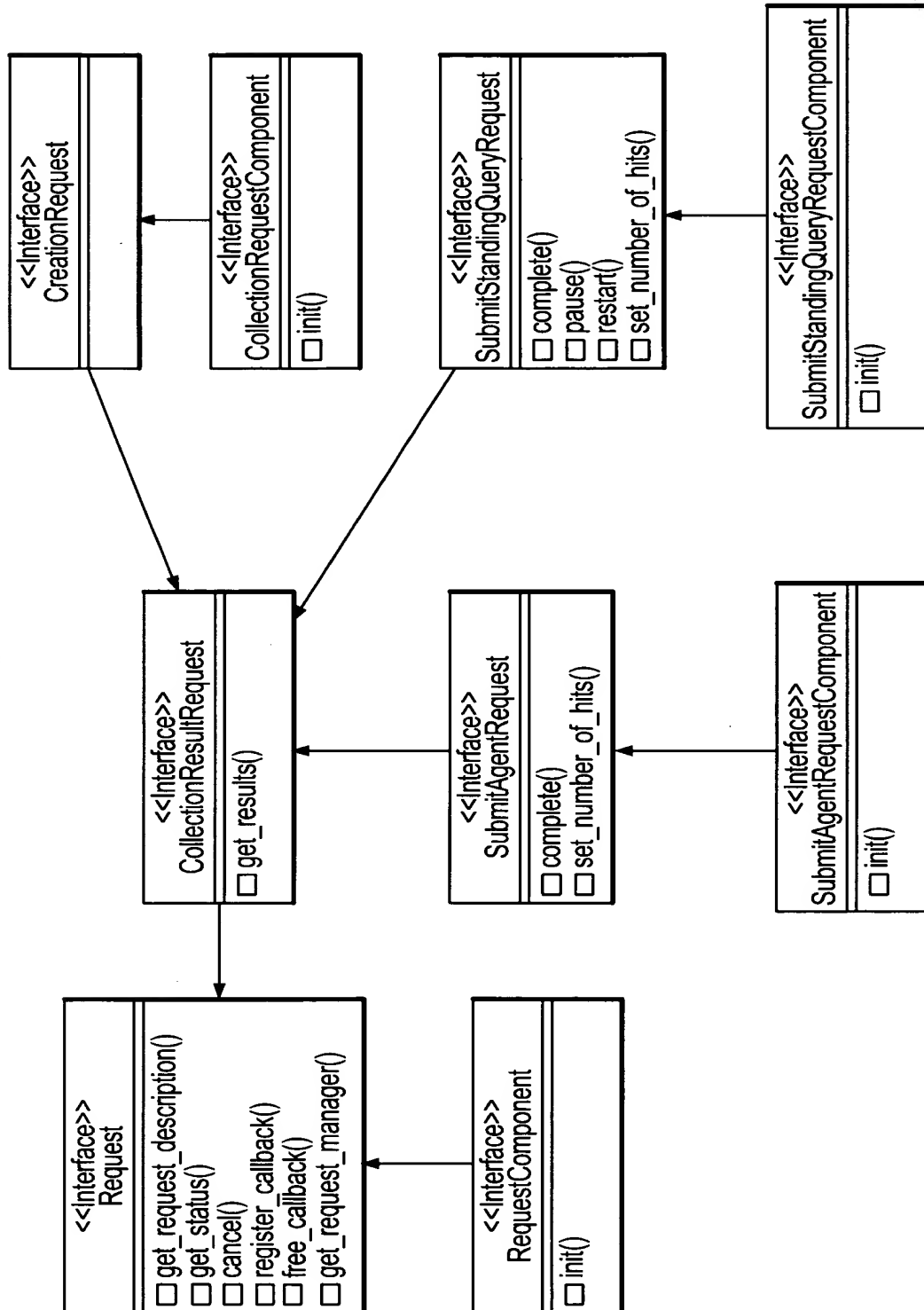


FIG.31

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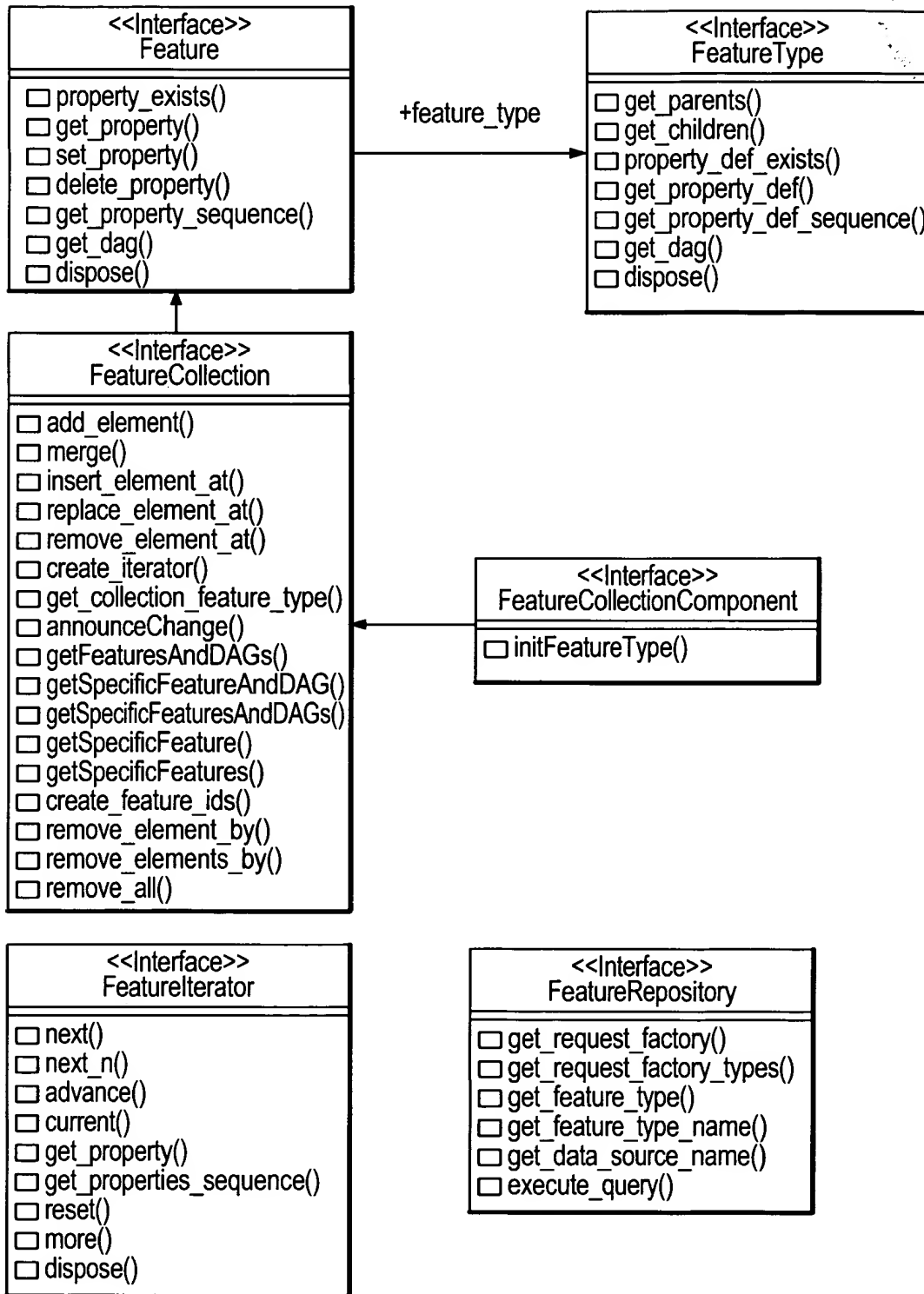
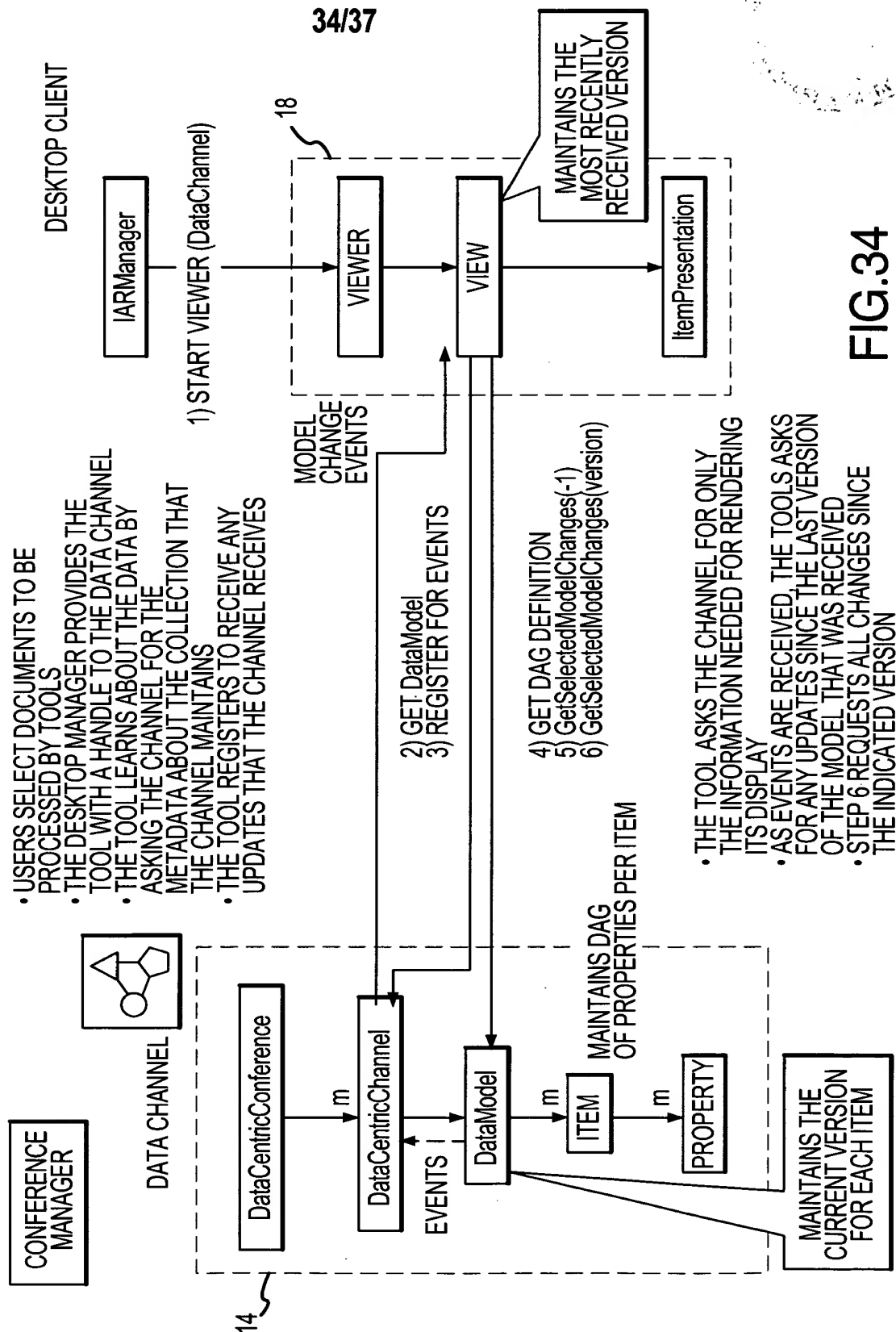


FIG.32



FIG. 33

VERSIONING DATA CHANGES IN THE DATA CHANNEL



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OpenGIS SIMPLE FEATURES SPECIFICATION
 UNDERSTANDING A FEATURE COLLECTION

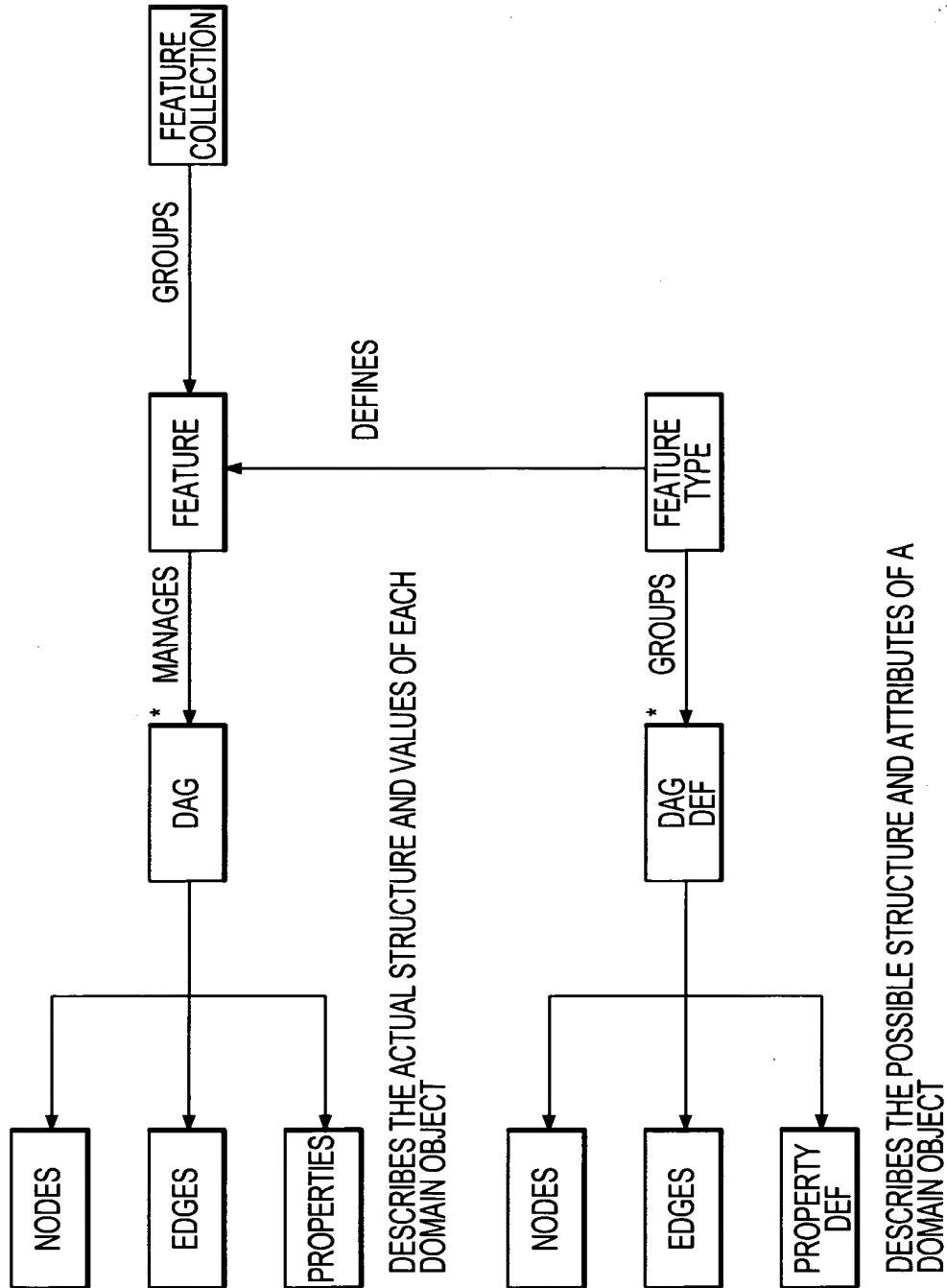


FIG.35

DIRECTED A-CYCLIC GRAPH (DAG)

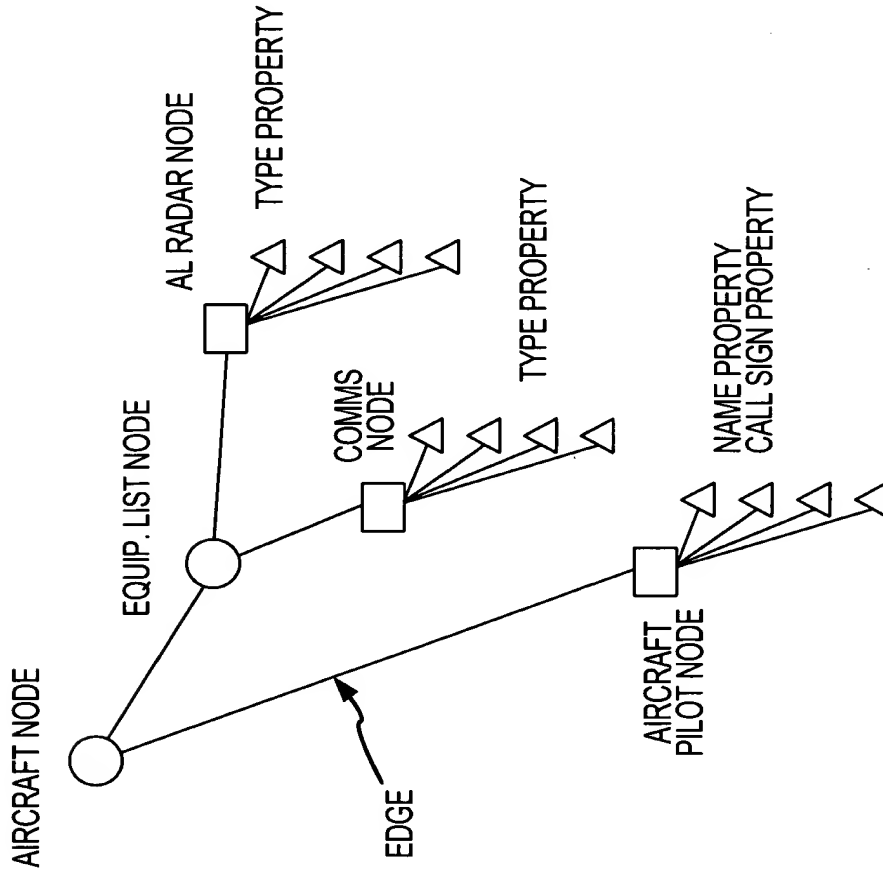


FIG.36

